vol 1

Item 17

Lecture

Gentlemen,

My business in this University is to teach the Institutes and Practice of Medicine. It is divided into three parts, viz. Physiology. Pathology. and Therapeutics.

Physiology includes the history of the human body in its healthy state.

Pathology includes the history of the causes, and seats of diseases.

Therapeutics teaches the remedy for the cure of diseases.

Medicine may be compared to a three legged stool, the legs of which are, Observation, Experience and Theory.

The mind is always active and consequently must think: the celebrated Dr Darwin says "to think is to theorize." It is a very common thing to decry theory.

Medicine becomes a Science only when combined with facts.

There are some erroneous theories on the science of Medicine which should be guarded against: viz. Dr Brown says debility is the cause of fever. Others say that the ferment of the blood (or what we now call zyme) is the cause of fever: These opinions are false. A morbid and pre-

A: By visiting sick people we discover symptoms which could not be described in Books. By studying diseases exemplified in real life, we are more able to counteract erroneous opinions. By examining sick people we are able to detect the false symptoms which we read of in Books.

preternatural action of the blood is the cause of fever. Many patients die of curable diseases.
1. From the ignorances neglect &c. of their physicians.
2. From the ignorance, carelessness, and inattention of nurses.
3. From their own prejudices, and imprudence, and from the intrusion of visitors.

The whole course of Lectures which I am going to deliver, will be upon facts only).

There are three modes of getting instruction in the science of Medicine. 1. By Books. 2. From Lectures. 3. By a careful examination and attention to the symptoms, diseases of the sick. (This may be acquired by an attendance upon the Pennsylvania Hospital.) The former is not so advantageous as the two latter methods. I would advise you to read all the cases that are printed and recorded; all those which occur either in public or private practice. (You will often hear and see symptoms in private practice; which you have never read of.) In cases of Phthisis-pulmonalis. I have always found a moist tongue, one very remarkable symptom attending it; but I have never seen it mentioned as a symptom in any of the Books which are published. Happily for our science, for this forty years past, Physicians have thrown by their large Folio's, and set down by the bed-side of their patients, in order to acquire a knowledge of diseases.

In order, gentlemen, to render these Lectures profitable to you. I shall make a few observations

vations upon the manner of attending them.
1. Be very punctual in your attendance, and never miss a lecture if it can be avoided.
2. Take brief notes. And when you return to your lodgings, enlarge them as much as your memory will admit.
3. Do not attend to many courses of Lectures at once. They will confuse you.
4. Make it a constant practice, to think, and talk over the Lectures which you have heard, when you return home. (This will serve as a test, to discover whether you understand them.)

I will now make a few remarks on the "Manner of attending the Sick."
1. Visit them once every day. (Keep an exact account of the different stages of the disease, the remedies made use of, and the effects which they have produced.)
2. Visit them at the same hour every day, if you can make it convenient. (This will prevent the injurious effects which sometimes arises from Physicians, neglecting to visit their patients at the hour which they had appointed. I knew a Lady who was kept awake all "night" which increased her disease very much." by her Physician's neglecting to come & see her at the appointed hour.)
3. Be careful to furnish your patients with medicines, as soon as you have prescribed them

4. Do.

4. Do not be led away from cases that are common to those that are uncommon. (The late Dr Hamilton whilst a student of Medicine in Edinburgh being at the Hospital one day examining very attentively a person in a feber, whilst several other Students were there, examining a child with two heads; one of the Students observing him, went to him and asked him why he did not come & see that uncomon case? he replied, "I do not expect ever to see a child with two heads again, but I expect to see many cases of fever")

5. Sit up with your patients in critical diseases, you will then have an opertunity of feeling the pulse very often thro' the night, remarking the alterations &c.

6. Do not leave your patients till they are perfectly cured. (The convalescence of some diseases is frequently attended with danger. I have known several cases of death, from Physicians leaving their patients too soon.)

7. Let no avocations of any kind hinder you from attending your patients.

8. Let your conversation be calculated to inspire them with hope.

9 Treat your patients with tenderness, but especially the female sex: they should be treated with the greatest delicacy and tenderness. (I hardly ever knew a young Physician that became respectable & eminent in his profession who sported with the diseases of females.

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We proceed next in order to mention "The manner of visiting a patient."

1. ee A Physician should shew the utmost respect and good breeding towards his patient.

2. When your patient is up Stairs if a Lady accompanies you, go before her untill you ascend the stairs. wait till she opens the door, and goes in and then you follow after her: when you return let the Lady go before. Delicacy requires that you should do so.

3. Where there is no person to accompany you up the stairs, you should either by your voice or by knocking, give your patient warning that you are come before you enter his room. (In some cases it is necessary to send your patient word, that you are come, especially if it be a Lady.)

4. After entering a sick room do not feel of your patients pulse immediately, but sit down in the room, warm yourself by the fire, if it be in the winter season. Take off your great coat; if wet, do not take it into a sick room.

In obtaining an account of your patients disease

1. Let your patient relate the cause of his disease. the seat of his pains & how he feels.

2 Let the family in which the patient lives relate what they think is the cause of his disease. and what his complaints are.

3. Enquire yourself of the patient. viz. into the duration of the disease. (Intermittents are known only —

only by their time of coming on.) into the manner of its attact. (diseases are often violent from the suddenness of their attact.) into the remote causes whether from cold, fatigue, fear, love, despair &c. — into the predisposing causes, whether age habit. &c. (Gout and seminal weakness in old age, are generally brought on by intemperance and onanism in early life.) — into the habits of previous life, viz. of eating and drinking — It is of consequence to enquire of what country he belongs to. You should enquire into the previous attacks of diseases, whether they have had any such disease before. & what were the remedies made use of. (The reason of this enquiry is because the same remedies are frequently called for, which have been used with success in the former diseases.) It is also of consequence to inquire into the remedies which their families have made use of. (We very often hear of a purge or a sweat being attended with very good success, in some families; in others quite the contrary.) It would be a very useful thing if parents would record their diseases, and the remedies prescribed for them, & transmit them to their children: for children very frequently have the same diseases which their parents had: I believe many children might be cured that are not, by knowing the diseases and remedies of their forefathers.

Now proceed to enquire into the proximate

Cause

cause of fever, and its seats. Altho' disease (as I hope to prove to you hereafter) is an unit, yet some parts are more disposed to disease than others.

1. Enquire into its seat.

2. Into the State of the alimentary canal. — Many diseases (specially) fevers, first take place in the stomach and bowels.

3. The State of the urine, whether it be discharged in large quantities; and whether there is pain in discharging, or whether the quantity is small.

4. Enquire into the state of the skin. Whether it be cool, dry, or moist; whether the heat be partial or general; whether of its natural colour, &c.

5. The State of the appetite, with respect to food & drink.

6. The State of the mind memory. &c

7. The state of the System, in sleep & when awake.

8. The position of the patient in the bed. It is — most favourable when the patient can lie on both sides alike without being restless.

9. The countenance.

10. The eyes should be attended to, and particularly the state of the pupil, whether dilated or contracted, red, watery or languid.

11. The State of respiration, whether it is difficult.

12. The voice.

13. The tongue should be inspected, whether — dark, black, dry, or natural: drinks sometimes colour the tongue.

14. The nails should be attended to. with respect to their colour, whether yellow, red, or black.

15. Above all the rest, the pulse should be particularly

6. In old age the pulse becomes less full, more frequent, and liable to intermission.

ularly attended to. The blood vessels occupy a high rank in the human body.

The pulse is to the system, as a dial plate, to the dial.

I now proceed to make some remarks upon the pulse. 1. Upon the natural state of it. 2. Its morbid state. 3. The manner of judging the morbid state of the pulse.

I. Of its Natural State.

1. Age has a very great influence upon the pulse. In a new born infant the pulse is from 130 to 140: in an adult from 60 to 80 in the healthy state: its medium is 66. In old age it is slow and intermittent, and sometimes as low as 42. In old age Dr Heberden mentions a case of the pulse in an old person being as low as 26. and in health.

2. Sex, influences the pulse, it is much quicker in women than in Men.

3. Civility also has an effect upon the pulse: it is more frequent in civilized people.

4. Size, influences the pulse, it is much quicker in persons of low stature, than in those that are very tall. In very tall persons it is at 55. in health.

5 Climate causes a difference in the pulse: it is slower in cold climates, than in hot: it is also slower in winter than in Summer.

6. Different times of the day increases the force of the pulse; it is slowest in the morning: this is owing to the system being exhausted, by the fatigue of the day & night.

7. The pulse increases and lessens with different degrees of light & darkness: sudden light has very great effect upon the pulse.

8. The

8. The pulse differs, in the sleeping and waking State: it is the slowest in sleep.
9. Different positions of the body, influence the pulse. It is slowest when lying on the back.
10. Different positions of the arms in the bed, effects the pulse: when uncovered it weakens the pulse.
11. Food and drink, influences it: It is reduced by fasting for some time: then it becomes exhilarated.
12. It is increased by conversation, by exercise, & by intense thought; or from a concentration of a patients thoughts upon his disease, by which respiration is suspended, the circulation impeded, & new action is created.
13. It is more frequent in pregnancy, in menstruation - in coughing &c. Opium, Bark, Mercury, & Blisters have very great effects upon the pulse. But as soon as their effects go off, the pulse returns to its natural state.
14. There is the Opium pulse, the Bark pulse, the Mercurial pulse, the Blister pulse, & the Morbid pulse.
15. Sudden fear reduces the pulse.
16. & Lastly. Some persons in good health, have their pulse preternaturally slow, others preternaturally quick. I knew a person, in whom there was a total absence of the pulse, in both wrists, & he suffered no inconvenience from it, and continued in good health.

Judge Peters of Philadelphia, who enjoys very good health, his pulse is always as high

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high as 100.

It is very difficult to feel the pulse, in very fat people, on account of the fat pressing the arteries down between the Muscles.

III. Of its Morbid State.

1. The heart and blood-vessels connected from one.
2. The heart and arteries, they are like the Sensitive Plant, if you touch the least fibre you put the whole into motion. This sympathy is much greater in internal than external parts.
3. Motion excited in one part is communicated to all the other parts.

Aneurism discovers itself by a tremulous motion, or jarring in the pulse.

Heart and arteries sympathise with each other. The intermitting of the heart and of all the arteries arise from the following causes.

1. A want of irritability in the blood.
2. From suppressed excitement. If the pulse be soft in Pneumonia Notha, it is owing to the lungs being engorged with blood pressing upon the artery so as to prevent tension: this I infer from two or three small bleedings producing tension.
3. From a disordered state of the pulse.
4. By large masses of external fat intervening.
5. From accidental pressure of the Muscles.
6. From diseases of the heart.
7. From irritability in the contiguous parts. Or by the sedative effects of cold which contracts the radial artery so much as to impede the circulation.
8. From the System being diseased. Sizey blood in a weak pulse is owing to a partial or one-

qual

qual excitement.

The circulation is much slower in an inflammatory state of the system, than it is in a healthy state, hence the cause of Abcess, Ulcers &c.

Rely upon no one sign, but upon all taken collectively.

I proceed in the next place to take notice of the deviations of the pulse.

I In frequency & quickness. (A pulse may be very quick, without being very frequent). The frequency of a pulse is the number of strokes which the artery beats in a certain time.

Quickness of the pulse is the greater or less time in which each pulsation is performed.

The pulse varies from 60 to 150. I have read a case of a man whose pulse fell to 7 strokes, in a minute.

The morbid causes of the deviation of the pulse are,

1. Pressure upon the Brain, as in apoplexy, Hydrocephalus &c.
2. A spasm of the heart.
3. From a defect of irritability in the arteries, induced by the excessive force of stimuli.

The pulse is generally slow and equable, sometimes, it is intermitting.

II. The pulse departs from its force with respect to order and irregularity: it imparts a jerking sensation to the fingers.

1. Is the depressed pulse.
2. The preternaturally frequent pulse.
3. The preternaturally slow pulse.
4. The intermitting pulse.
5. The perfectly natural pulse, in point of frequency

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-quency), but depressed. It is sometimes met with in the Plague, Yellow-fever, Small-pox and in bilious Pleurisies. In this depressed state of the pulse the heart and arteries retain their irritability; this I infer from its rising after bleeding.

6. The partial or general pulse.

A depressed pulse occurs generally in tremors of the body, and convulsions.

A depressed pulse differs from a weak pulse in the following particulars.

1. By its occurring in the first stage, or paroxism of a fever.

2. By its imparting, when long felt, sense of tension to the fingers.

3. By its occurring most in a morbid affection of the heart, brain, Stomach & bowels more than in other parts of the body.

4. By its occurring just before and after venesection. This is in consequence of suffocated excitement being let loose upon the System and acting with so much force.

5. By being occasionly attended with a preternatural slowness. Not the case in a weak pulse.

III. There is a distinct but small and tense pulse, which I shall call the Sulky pulse. It imparts a sensation to the fingers like that of pressing a tense caput.

IV. There is a pulse in fevers, which is full round, vigorous, frequent and quick, but without any tension or hardness. it occurs in the Yellow-fever. I name it the Synochus-fortis.

V. Is the, full, quick, frequent, and tense, but not round pulse; it occurs in inflamatory fevers.

I shall

I shall call it the Synocha pulse. It imparts a sensation like that of feeling a large quill.

VI. The quick, frequent, tense, or small pulse, it occurs in chronic rheumatism, and some other diseases; I name it the Synochula pulse. It imparts a sensation like that of feeling a small Goose quill.

VII. Is the full, round, soft and frequent pulse, without any tension: it occurs in mild bilious fevers. I name it the Synochus mitis.

VIII. Is a compound of the Synochus & Synocha, it is partly tense, & partly soft: feels like a quill that has been trod upon. - name it the Synochoid pulse.

IX. Is the frequent pulse, with now and then a round, full, & tense stroke. - name it the Typhoid pulse.

X. The weak, small and frequent pulse, without tension or fulness. In this state of the pulse the blood vessels are deprived of a great part of their irritability. This is the pulse that forbids bloodletting, & admits cordials. it occurs in malignant fevers. Call it the Typhus pulse.

XI. Is the natural, full, round & frequent pulse, but so very soft as to fail by the pressure of the fingers upon it: it imparts a sense of emptiness to the fingers. - name it the Gaseous pulse.

XII. Is the quick and frequent pulse, rarely Synocha, Synochoid, or typhoid: it occurs in pulmonary consumption. Name it the Hectic pulse.

XIII. The unequal or fluctuating pulse it arises. 1. From one, to two or three weak strokes

gradually

gradually succeeding a strong one: it is called the Hobling pulse. 2. Unequal and fluctuating in extremes from great force to weakness & vice versa. 3. Unequal and gasping suddenly from slow to quick & vice versa.

XIV. Is the double pulse, viz. after short intervals, two distinct strokes one always weaker than the other.

XV. The small, frequent, serrated pulse, which strikes only one part of the finger, at the same time, it is called Serrated, from its raking like a saw.

XVI. Is the small, frequent & unequal pulse, called the Vermicular.

XVII. The apparently natural pulse, which is attended with great danger. We must here have resource to other symptoms, as pain &c.

XVIII. Is the morbid state of the pulse. The arteries are possessed of muscular fibres, and great contractibility; of course impressions made on one part, imparts it to all the others. by means of their contiguous sympathy. I attended a Capt Hardie of the American navy, in whom I felt a very great jarring in the pulse for which I could not assign any particular reason. I requested Dr Physic to go with me & see him. Dr Physic after asking a few questions. & examining him, discovered an Aneurism in the Carotid artery.

When the stomach and bowels are inflamed the pulse becomes tense and small. It becomes small from the arteries becoming smaller from inflammation & pressure upon them. It is rendered weak. by lying upon the arm; by diseased which affect one part only; by the disease being

insulated

insulated, in the lungs & womb. In the beginning of pulmonary consumption, we are to bleed without regard to the pulse! Absence of Fever produces what is called passive Inflammation. Pain & fulness of the tongue, does not always attend disease.

I have thus enumerated the different kinds of the pulse, but you are not to suppose that you will find always, the different pulses, in different diseases. They are often combined, in different diseases; they are often combined, in two fold, three fold & sometimes four fold state.

In a two fold state.

1. Quick and frequent.
2. Depressed & weak.
3. Slow and intermitting

Weakness and frequency of the pulse generally go together.

In a three fold state.

1. Full, strong & quick.
2. Full, strong and frequent.
3. Small, weak and slow.

In a four fold state.

Full, strong, quick and frequent.

The aneurismatic pulse is known by its full, tense, and tremulous or jarring motion. There is sometimes a total absence of the pulse, for hours, and sometimes days, without extinguishing life. In palsy it is generally fullest on the morbid side. We generally find a frequent pulse at the close of all convalescent diseases.

There

There are ten grades of the pulse. five above & five below the natural state. which I place at 0. In a fever of Synochus fortis it is five above. in a Synocha four above 0. &c.

When decends below, by debility. I place it three below 0. The creeping pulse five below 0. this is the lowest grade.

Dr Bordeau. divides the pulse into superior & inferior. The superior is subdivided into. pectoral. guttural & nasal. The inferior into. stomachic. abdominal. uterine & hepatic.

Nosology is a fruitful source of error. it multiplies. diseases & medicines very unnecessarily. It is impossible always to find out the seat of the disease. happily for us we do not with to.

Of the maner of "feeling the pulse".
1. Never feel the pulse when you first enter your patients room. The sight of a Physician either depresses or exhilarates the patients spirits. which never fails to effect the pulse. Sit down in the room. if cold. warm your hands: feel the pulse before you ask the patient any questions: conversation excites the pulse. Markham say the first sight at the mark, is always the best; the same may be said of the pulse, the first feeling of it, is the best.
2. Apply your four fingers to the pulse: by this means you will feel more sensation than when two or three finges are applied: & when you feel the pulse of the right hand arm, feel it with your left hand. & vice versa: and take care to prep it gradually.

3. In —

3. In doubtful cases feel the pulses in both wrists.
4. The arm in which you feel the pulse, should be free from pressure, & placed in such a position as will relax the muscles. From an inattention to the action of the Muscles, on the pulse, mistakes are often made.
5. If one arm has been uncovered, take the other to feel the pulse; if both ~~of the~~ have been uncovered, request the patient to put them under the bedcloaths a few minutes, before you feel the pulse.
6. You should never take your fingers off of the pulse, until you have counted at least twenty strokes. I have felt an intermission after the eighteenth stroke.
7. In very difficult cases desire the patient to shut his Eyes, & request silence in the room. It is of advantage sometimes to take the fingers off of the pulse, a few moments, & then apply them again.

When the radial artery cannot be felt, the temporal artery must be felt. In diseases of the head, the temporal artery should by all means be felt of.

Rubbing the fingers on rough surfaces or immersing them in warm water creates sensibility in them.

Opium, Bark, bleeding, blisters, vomits, purges, issues, setons, pediluvium, cold & hot baths, aliments & drinks &c. should never be prescribed without first feeling the pulse. I have therefore conveyed to you the materiel parts, concern-

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ning the pulse, which are chiefly from my own observations.

Where I to erect a Temple of Medicine, I would inscribe, not only over the front door, but over every door of the House,

"Let no man enter here, who is not acquainted with the pulses."

Physiology.

Physiology is that branch of medicine, which treats of the laws of the human body in its healthy state. In treating of the human body, I shall first consider, its erect form, the shape of the face, the situation of the eyes & ears, the position of the body and limbs; all of which indicate, that we were made to stand erect upon our feet.

Second, the height of the body.

Third, the symmetry, & just proportion of all the parts.

Of Animal Life.

But, what is the erect form, height, the symmetry & just proportion of the parts, without life?

It proposes loco-motive powers; it perceives, combines ideas, judges, reasons &c. Human life is a thinking principle.

I proceed to consider the cause of the phenomena of life, which are four, viz. Motion, heat, sensation, & thought; the four when united constitute perfect life. It may exist without thought, or sensation: but neither sensation nor thought, can exist

::: contractility

:: from this it appears that the body is a unit.

: a certain tension or of the Glands

exist without motion. The lowest grade of life, probably exists in the absence of even motion. Animalized matter occupies the highest grade of matter.

In treating upon this subject, I shall begin by delivering the three following propositions: viz.

1. Every part of the human body (nails & hairs excepted) is endowed with sensibility or excitability or both of them; this property has been called by many names, viz. irritability, mobility, stimulability &c. but I prefer the term excitability.

By sensibility is meant the power of having sensation excited by means of impressions. Excitability denotes that property of the human body, by which motions is excited by means of impressions

2. Impressions made in the healthy state upon one part, excite motion, or sensation or both, in every other part of the body.

3. Life is the effect of certain stimuli, acting upon the sensibility & excitability, which are extended in different degrees, over every part of the body, both externally & internally. These stimuli are as necessary to its existence as air is to flame. Animal life is truly (to use the words of Dr Brown "a forced state." Dr Cullen says "the human body is not an automaton, or self moving machine, but is kept alive, & in motion by the constant action of stimuli upon it." I proceed to remark that the action of the brain, the diastole & systole of the heart, the pulsation of the arteries, the peristaltic motion of the bowels, secretion, excretion, hearing, seeing, smelling, taste, may even

thought.

iv. certain tension of the Glands

v. see the formation of a Man in the Old Testament

even thought itself. are all the effects of stimuli acting upon the organs of sense and motion. These stimuli are divided into external & internal.
II. The external stimuli are air, light, odours, sound, heat, exercise, & the pleasures of the senses.
III The internal are food, drinks, chyle, blood &c. exercise of the faculties of the mind &c.

The human body has no self moveing power, it is moved by force externally applied. The body as well as the mind is moved by impressions.

I proceed next to consider the external stimuli.
1. Air: it acts as a powerful stimulus through the medium of the lungs upon the system. &c.
It is the first principle of life: this I infer, & think I have sufficiently proved from Scripture.

The soul and body of Adam were cast in the same mould and at the same time.

The life which a child possess in utero is, derivative life. After birth, the air moves the lungs. the lungs the quiescent heart, the heart moves the brain, & the brain the quiescent mind.

The first motion of the lungs, is involuntary, after a while it becomes partly voluntary and partly involuntary. Actions involuntary may by habit, become voluntary, & vicevesa. The command of the muscles, in infants are involuntary, in adults voluntary: in old age they become involuntary again. Respiration is at birth involuntary, at death it becomes voluntary.
2. Light: this acts as a stimulus upon certain parts of the body, but chiefly through the ~~organs of~~ medium vision

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medium of the organs of vision. It is remarkable that the progenitor of the human race was not brought into existence untill all the luminaries of heaven were created.

3. Sound has an extensive influence upon human life. Fear produces debility, which is a tendency to death: Sound obviates this debility & restores the system to the natural & healthy grade of life.

For example, a School boy or clown invigorate their feeble legs by whistling, as they pass by a country Church-yard.

4. Odours have a sensible effect in promoting animal life. Their effects appear more obvious in the sudden revivle of life which they produce in case of fainting.

5. Heat is an uniform and active stimulus in promoting life.

6. Exercise acts as a stimulus, in various ways upon the body. viz. 1. Upon the muscles. then on the blood vessels & they again on the nerves & brains.

7. Pleasures of the senses, have a very powerful & extensive influence upon life.

III. Of the internal. Stimuli.

1. Food, it acts five ways. viz. 1. Upon the tongue. 2. By mastication. 3. by deglutition. 4. By its presence in the stomach, by which it acts according to its quantity or quality. A single onion will support a lounging Highlander, on the hills of Scotland for 24 Hours. An indigestible cover of an old Bible, supported a dog confined in a room for 20 days. 5. by the process of digestion.

2. Drinks. They act principally by digestive distention.

3. The Chyle

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3. The chyle is attended with some stimulating effects.

4. The blood is a very important internal stimulus. It has been disputed whether it acts by its quality, or only by distending the blood vessels. It appears to act in both ways. I believe with Dr Whytt that it stimulates the heart & arteries by its specific action

5th The exercise of the faculties of the mind, have a very great influence upon life. They all act by reaction only, after having been previously excited into action by impressions made upon the body.

Dr Brown supposes the mind to be active in sleep, in a healthy state; but I hope to establish hereafter the opinion of Mr Locke, that the mind is passive in sound sleep. It is true it acts in dreams; but these depend upon a morbid state of the brain. & therefore do not belong to the present stage of our subject. for I am now considering animal life in its healthy state only. Life is in a languid state in the morning; it is in its most perfect state about midday, and remains stationary for some time, it lessens in the evening, and becomes again languid at bed time. The healthy actions of the body in the waking state consist in a proper degree of what has been called excitability & excitement. Disease is the reverse of this. It is a law of the system that the absence of one natural stimuli, is generally supplied by the increased action of another. Dreams are intended to supply the place of some natural stimuli.

I proceed in the next place to consider in what manner animal life is supported in sleep.

Sleep

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Sleep is either natural or artificial. Natural sleep is induced by a diminution of the excitability, & the abstraction of stimuli. Artificial sleep, is induced, by the use of opium, & other remedies, which either raise or depress the system, to what is called the "sleeping point".

At the usual hour of sleep there is an abstraction of the stimuli, of light, sound, & muscular motion. The stimuli which remain, & act with increased force upon the body in sleep are,

1. Heat, which is discharged from the body, and confined by means of the bed clothes. It is most perceptible when exhaled from a bed fellow. Heat obtained in this way has sometimes been employd to restore declining life to the bodies of old people. Witness the damsel who lay for this purpose in the bosom of the king of Israel.

2. The air which is applied to the lungs during sleep probably acts with more force, than in the waking state.

3. By respiration being performed with a greater extension & contraction of the muscles of the breast in sleep, than in the waking state, and this cannot fail of increasing the impetus of the blood in its passage thro' the heart & blood-vessels.

The increased fullness & force of the pulse at this time is owing to Respiration.

4. Aliment in the stomach acts more powerfully in sleep than in the waking state. This is evident from digestion going on more rapidly when we are awake, than when we sleep. The more slow the digestion, the greater is the stimulus of the

c: are found dead in the morning, are said to d::

of the aliment in the stomach. For this reason
so is that labourers object to milk, for their breakfasts. & proper pork, onions & sausages, or such
things, as they feel in their stomachs the whole
day.

5. By the stimulus of urine which is accumulates in the bladder during sleep.

6. The faces exert a constant stimulus upon the bowels in sleep.

7. The partial & irregular understanding exercises of the passions in dreams have an occasional influence in promoting life. They occur only when there is a deficiency of other stimuli.

The incubus or night mare arises from a languid circulation of the blood in the heart & brain: do not complain then. Gentlemen, when you are bestrode by this midnight hag: she is kindly sent to prevent you from sudden death. Persons who go to bed in health, & die of this disease.

How is animal life supported in persons who have passed many days in fasting? By the stimulus of the Gall Bladder; by increased sensibility & excitability in the sense of touch; by increased acrimony in all the secretions and excretions of the body, & by an increase of activity in the understanding & passions.

How animal life is supported in asphyxia, or apparent death. I refer you to my printed Lectures.

It now remains for me to mention certain mental stimuli, which have an influence upon health. They are,

1. The

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1. The desire of life. This principle so deeply, & universally implanted in human nature acts very powerfully in promoting our existence. It has been observed to prolong life.

2. The love of Money: it sets the whole animal machine in motion. Hearts which are insensible to the stimuli of religion, patriotism, love. & even the domestic affections, are excited into action by this passion.

3. Public amusements of all kinds, exert an artificial stimulus upon the system.

4. The love of dress is not confined in its stimulating operations to persons in health It acts preceible in some cases upon invalids. I heard of a gentleman in S. Carolina, who always relieved himself of a fit of low spirits by changing his dress.

5. Novelty, is an immense source of agreeable stimuli.

6. The love of fame acts in various ways; but its stimuli is most sensible & durable in military life.

7. The love of country, is a deep seated principle of action in the human body.

8. The different religions of the world, by the activity which they excite in the mind, have a sensible influence upon human life.

Air, is the primum mobile, or the main spring of life in all animals. I would as soon believe that

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that the rising & falling of the Tides is owing to an inteligent principle in the water, as that the human body is kept alive by an intelligent principle. The absence of one stimuli is supplied by the presence of other stimuli.

The doctrine which I have delivered supposes Man to consist of two parts, viz. Soul and Body. Some say it consists of three, viz. Spirit, Soul & Body, that the Spirit lies in the brain, and the Soul, over the whole body: this is false.

The causes of life which I have delivered will receive considerable support by contrasting them with the causes of death. It is brought on.

1. By the abstraction of all the stimuli which support life.
2. By the excessive force of stimuli of all kinds.
3. By too much relaxation, or too weak a texture of the matter which composes the human body.
4. By an error in the place of certain fluids, or solid parts of the body.
5. By the action of Poisonous exhalations, or of certain fluids vitiated in the body, upon parts which exerts most forcibly the motions of life.
6. By the solution of continuity, by means of wounds in vital solid parts of the body.
7. Death is produced by a preternatural rigidity, and in some instances, by an ossification of the solid parts of the body in old age; in consequence of which they are incapable of receiving & emitting the motions of life.

Should

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Should it be asked, what is that peculiar organization of matter, which enables it to exhibit life when acted upon by stimuli? I answer, I do not know.

We think by force, as well as live by force. If any person doubts this, let him cease to think: as well might he endeavour to stop the course of a Planet by holding up his finger, as to suppress his thoughts. Chemistry is an excellent hand maid, but a bad mistress in medical philosophy.

I conclude this subject, by observing that the doctrine of animal life, which has been taught, exhibits in the first place.

1. A new view of the nervous system, by discovering its origin in the extremities of the nerves, on which impressions are made, and its termination in the brain.

2. It discovers to us the true means of promoting longevity and health, by proportioning the number & force of stimuli, to the age climate, habit &c. situations & predispositions

3. It leads us to a knowledge of the causes of all diseases.

4. It discovers to us that the cure of all diseases depend simply upon the abstraction of stimuli from the whole, or from a part of the body: when the motions excited by them are in excess: & in the increase of their number and force. when motions are of a moderate nature.

5. It

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5. It enables us to reject the doctrine of innate ideas, & to ascribe all our knowledge of sensible objects, to impressions acting upon an innate capacity to receive ideas.

6. That the origin of human actions, is by the impression of motives upon the will.

7. There are errors of an impious nature, which sometimes obtain a currency, from being disguised by innocent names. The doctrine of animal life that has been delivered, is directly opposed to an error of this kind, which has had the most baneful influence upon morals & religion.

8. It does homage to the supreme being, as the governer of the Universe; & estabishes the certainty of his universal & particular providence.

9. It rejects the error of self existence. Self existence belongs only to God.

10. It is calculated to humble the pride of man, by teaching him, his constant dependence upon his Maker, for his existence. Animal life is the chief corner stone of medical operations.

Here, Gentlemen, we close the history of animal life: I feel as if I had waded across a dangerous and rapid stream. Whether I have gained the opposite shore with my head clear, or covered with mud and weeds, I leave wholly to your determination.

III. Of

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III. Of Animal Heat.

Air as I have said before is the first principle of life. The body of Adam was in the first place formed cold, no sooner was the air breathed into his nostrils, than a gentle heat was diffused over the whole body; by this means the solid blood was liquified, & spread thro' out all the vessels of the body.

Our business is to inquire into.

II. The Origin of this heat. It is not the same in all parts of the body, but is unequally diffused throughout.

III. Into its phenomena.

1. From its equal temperature.
2. That it is the same in all ages.

The ova of animals resist more cold, than any other part of them.

3. That the heat of the human body is the same in both sexes.
4. That it is nearly the same in all parts of the human body. On the skin the degree of heat is from 97 to 98°. on the tongue 98°. in the urethra 92°. and in the rectum 98½.
5. It is the same in the solids, as in the fluids.
6. It is increased by exercise, passions of the mind &c.
7. It is one degree less in sleep, than when awake. says Dr Hunter. Dr Darwin says one degree greater; both are true.
8. In certain diseases several of the phenomena do not take place.

I shall proceed in the next place to mention the supposed different causes of Animal Heat.

II. Dr

a See page 115 line 12.

II. Dr Stephenson says that animal heat depends upon the fermentation of blood. This I do not admit.
1. Because there is no such thing as a fermentation of the blood.
2. It is incompatible with health.
3. Putrefaction is not attended with heat, the body putrefies after death, when it is entirely cold.
4. That all animals which breathe as we do, have the same degree of heat: Now this would not be the case if it depended upon putrefaction.

III. Another opinion is, that heat is generated by the friction of the blood, in the blood-vessels. To this I object.
1. Because heat cannot be produced by the friction of the blood.
2. In producing friction, it is necessary, that one of the bodies should be at rest; this is not the case.
3. We often find the skin cold, and the blood without any interruption; sometimes the skin is warm, & the blood will be stopped.
4. The blood does not flow with sufficient force through the blood-vessels.

IIII. A third opinion is, that it depends upon the action of the particles of the blood, in the blood-vessels. This I do not admit.

IV. Dr Cullen supposes the heat of the body, to be its vital principle. This I also deny.

All these theories have given way to Dr Blacks theory, which is, that animal heat is brought on
1. By combustion. The phenomena which was supposed to be thrown out, is called phlogistion.
We all carry fire in us: the trachea is the chimney. (says Dr Black)

Simple

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Simple & beautiful as his Theory is there are some very great objections to it. The facts which prove his theory are.

1. Because air is absolutely necessary to animal life, no animal exists without it.

2. That heat is generated according to the quantity of air which is consumed in respiration; Some say one gallon is consumed in a minute; but it is more likely, three gallons are consumed in that time.

3. Animal heat is in proportion to the quantity of air, and size of the lungs. Now if we follow his Theory, the heat of the lungs, which he calls the chimney, ought to be much greater than that of any other part, which is not the case. Birds have larger lungs than men, (accordingly) and of course greater heat, it being at about 111°

4. That the air we exhire is true phlogisticated air; it extinguishes flame, & is fatal.

5. From the oxide which is contained in the air which we breathe.

6. From the azotic air of the lungs being less warm, than the atmospheric.

7. By the arterial blood being warmer than the venous blood.

8. From the analagous effects of air from a warm body, and from the lungs.

I object to Dr Blacks Theory

1. From the heat of the body, which is supposed to be the same in all parts. All bodies contain a certain quantity of calorie.

2. From the action of the air, on the blood out of the body.

3. From the heat of the body, the heat being one degree

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degree greater in the lungs. than in parts more remote.
4. From a morbid coldness, or from a burning in the lungs. Just before death, the body feels entirely cold externally, but immediately after death it becomes warm again; this is owing to the heat of viscera diffusing itself thro' the whole system.
5. By heat being increased by the passions of the mind. The same stimuli which produce animal life. produce animal heat.

Oxigen is derived from our aliments. as well as from the air heated in our lungs.

Evaporation produces cold.

Trees are two degrees warmer in summer than the atmosphere which surrounds them: and in winter they are two degrees colder.

The lungs inhale a great quantity of moisture. and why not discharge it?

Heat uncontrolable sometimes occasions death. by burning the body. I have heard of a woman in New York who was found dead in her bed, with her legs very much burnt, it was supposed to be the occasion of her death. I believe it to be a fact. for why may not the heat of the body, be subject to an error loci, by an excep &c. as disease.

That heat is the cause of death in some. I infer

1. From its occuring more particularly in fat and drunken people.
2. In women more than in men especially in old women.
3. From the extremeties being burnt oftner than other parts.

4. Because

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4. Because when water is thrown upon it. increas the combustion.
5. From the parts which are burnt being very greasy externally.

Uses of the Heat.

1. It preserves the fluidity of the blood. and the other juices of the body.
2. To keep up by its stimulus the motion of the different parts.
3. To give sensibility to the nerves. & irritabil ity to the muscles.
4. It renders the senses more acute.
5. It promotes the solution of food in the stom ach.

IIII.

Of Respiration.

As I said before. respiration is at first involuntary. by habit it becomes partly voluntary & partly involuntary. Respiration consists of two parts, viz. Inspiration & espiration.

For a description of the parts concerned in Respiration. I refer you to Anatomy.

There is but little or no sensibility or excitability in the lungs. In wounds and in deep seated abcesses in the lungs. there is no pain except when the pleura is inflamed. Experiments prove the want of sensibility in the lungs. in a natural state.

Causes of Respiration are.

1. From the uneasiness. which is felt in the breast

breast, after every expiration, from the stimulus of air, and by the distention in inspiration.
2. From the stimulus excited in the lungs from the dephlogisticated air.

Uses of Respiration.

1. To admit air into the lungs: it gives the first impulse of life. to all the children that are brought into the world. Heat, motion & thought proceed from it.
2. It serves to convey moisture into the body.
3. It conveys a sense of heat to the body.
4. It conveys off the unhealthy particles from the lungs; it also gives the blood its red colour.
5. It serves to propel the blood thro' those vessels that are not acted upon by the heart as in the Liver and Spleen.
6. It serves to keep up a steady action in the different parts of the body.
7. It is the means of producing smelling.
8. It assists the uterus in parturition.
9. It assists in dividing the component parts of our aliment into blood.
10. It serves to promote secretion.
11. It serves to convey a certain quantity of [illegible] into the blood. An excess of air induces disease, and sometimes death.
12. It enables an Infant to perform the operation of sucking.
13. Lastly, it assists in forming the human voice. In respiration the females move the pectoral muscles more than the males. & the

males

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males move the abdominal muscles more than the females.

There are certain voluntary actions connected with respiration. viz. coughing, (coughing) is produced from the lungs being stopped up with mucus, irritating them so much as to cause a convulsive motion called coughing.) sneezing. yawning. (Yawning) serves to aerate the blood in the bloodvessels. panting urges the blood forward when like to stagnate.) laughter. (in laughter the action of the lungs is much quicker than at other times.) & crying.

There are two other connections with respiration. viz. Voice and Speech.

1. Of Voice.

The parts necessary for forming the voice are the trachea, Larynx & Glottis. By voice I mean that sound. which is emitted from the mouth either in reading. talking. singing. hallowing &c. I believe that Sound is produced the same way that it is in a wind instrument.

The voice increases in strength by the nose & mouth. The uvula contributes much in making the voice. Variety of tones arises from the variations of the Glottis. Sounds are divided into acute & grave. weak & strong.

Singing is the protraction of the voice. The trachea is elongated or shortned according to the different tones made use of. The voice changes at puberty. it is varied by the passions. It is quick and strong in anger. soft in

love &c. by the weather, by pain; there is a sameness of the voice, in persons of the same country. The voice is stronger when standing, than in sitting. It is improved by diseases, especially in the delirium of a fever. I knew a young Lady who in a delirium of a fever, would sing the most delightful, of any person I ever heard. The thyroid gland is inserted to prevent excess of the voice.

2. Of Speech.

In the exercise of speech man stands alone.

This I infer,

1. Because there is no speech where there is no respiration, and only when it is voluntary.
2. It is formed by the trachea, & larynx down to the glottis. If the larynx be cut below the glottis there will be neither voice nor speech.
3. In Infants it is wholly derivative, they generally begin to talk in about 15 or 18 months.

I knew a woman who had twins, & they did not either of them speak untile they were eight years of age: they could make each understand by signs, & they were very fond of each other: I was consulted in what manner they should be taught to speak, I advised the woman to seperate them from each other, which she did, & they soon learned to talk.

The parts used in speech are the larynx, uvula, tounge, mouth, teeth, nose, throat & glottis.

In the

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In the Infant, 1. The larynx & glottis are set in motion, by crying; this also promotes respiration.

2. The larynx & glottis are exercised by laughing; this begins very early in life.

3. Crowing which begins about the fifth month, is a slow inhaling thro' the lungs

4. The muscles of the tounge about the eight month, by uttering the words. dada, mama, &c. about the ninth month the lips are exercised, as in the words papa which they use, hence papa. Playing on the lips as children do promotes Speech. The growth of the fore teeth also promotes it. - imitation and looking into the face of those who speak to them, facilitate speech. Words sung to Infants, facilitate speech more than when spoken.

Distinctions of the voice into

a. o. Guttural b. p. Labial c. s. Dental l. r. Lingual m. n. Nasal	}	Sounds.

Speech has been taught to those who are dumb. There is no defect in the organs of those who do not speak; the reason they do not speak is because they cannot hear; the ear is the defective part. The methods of teaching the dumb to speak are,

1. To supple the larynx, and teach them to expel -

expel air: the lungs is supplied by pressing & rubbing it.

2. They are taught to speak, by making them move their lips in the same manner that you do when you speak to them, & desire them to expel air at the same time.

There are no such things as ventriloquisty. Speech is formed by respiration, which proceeds from the voice & lungs only. The English Language has upwards of 40.000 different words

Uses of Speech

1. By it man is enabled above all other creatures in the world; Brutes are stationary in their knowledge, because they have no speech.
2. It is the medium by which we convey our ideas to each other. And what is far above all others,
3. It is one of the means, by which we are to serve & glorify God. nay, we are commanded to serve him with our hearts & voices.

Speech, no doubt was given to Adam as soon as he was created. & in one language only.

IV. Of the Circulation of the Blood.

In treating of the blood I shall,

I. Enquire into the course of the blood after it passes thro' the lungs where we left it in treating of respiration.

II. Into the peculiarities of the structure of the vessels.

IIII. Of the

IIII. Of the powers which move the blood. &c.

IV. The advantages of its circulation.

I. Of the Course of the Blood.

The blood from all parts of the body being returned into the vena cava passes from it into the right auricle. by the contraction of the right auricle, it is thrust into the right ventricle. & by its contraction into the pulmonary artery; from the pulmonary artery it passes into the lungs. from whence it is returned by the pulmonary veins into the left auricle; by the contraction of the left auricle, it is thrust into the left ventricle; by the contraction of the left ventricle, it passes into the aorta. & its ramifications over all parts of the body. from the small branches of the aorta, is taken up by the small veins. & by them is returned to the vena cava again; & this circulation is incessantly reiterated. It is remarkable that the auricles & ventricles are synchronous with each other. Two ounces of blood are discharged from the heart in every contraction.

The lymphatics act as a handmaid to the Blood vessels.

III. Of the peculiarities in the structure of the Heart & Blood vessels, & their Courses.

I. Of the Heart.

1. It has

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1. It has an oblique position in the Thorax, inclining to the left side.
2. It has an external covering called the Pericardium.
3. The cardiac nerves are accompanied with an artery called the coronary artery, which stimulate the nerves of the heart.
4 It is a hollow muscle divided into different cavities.
5. It is the reddest muscle in the body.
6. It beats nearly 3000 times in an hour.
7. Its size is in proportion to the strength of the Animal.
8. The human heart has two auricles & two ventricles. Some animals have two auricles, & only ventrical, as the whale; some have no ventricle, as the polypus.
9. There is an exquisite degree of Stimulability in the heart. The right auricle beats longer than the left, & is more irritable.
10. The cavity of the heart has more irritability than its external part. Its sensibility is by no means equal to its irritability. It is found that the heart is more irritable in young than in ob people. The left ventricle is larger in Americans than in Europeans.

III. Of the Arteries

1. They are composed of three coats, viz. muscular, membranous and nervous.

2. All the

2. All the arteries have nerves & blood vessels, accompanied with lymphatics.
3. There is a great deal of mechanical elasticity in them. The contraction of the heart and arteries are synchronous with each other. The contraction of the heart, forms the pulse of the heart; and the irritation of the arteries constitute the pulse of the artery.
4. They are stronger in proportion to their diameters. & in proportion to their being near to the heart: they are the strongest where they are curved. The branches they send off from them form acute angles. Whenever ossifications takes place in them it begins internally.
5. The arteries anastomose; and the large ones are covered with muscles & fat. They are also stronger than veins.

IIII. Of the Veins.

1. They are composed of the same number of coats with the arteries, but they are thinner more dense, and less elastic. Their fibres run longitudinally hence they have no pulsations.
2. They are stronger in proportion to their distance from the heart.
3. In proportion to their density they resist more pressure than the arteries.
4. Their branches run more superficially under the skin.
5. Most of the veins have valves: the veins

abound

abound most in the extremities.

6. There are a greater number of veins than arteries; & there is more blood in the veins than in the arteries. The arteries are always circular when filled with blood.

Obstructions first take place in the veins, & then they communicate it to the heart & arteries.

IIII. Of the powers which move the Blood.

1. The heart is the first power; it moves it by its distension & by the irritability which it receives from the influx of the brain. It appears to act by its quality as well as by its quantity; of course it acts specifically upon the sanguiferous system. X

In some diseases the heart beats so strong that it may be heard all over the room in which the patient lies, nay it sometimes raises the bedcloathes. & I have heard of an instance in which it beat so strong as to protude the sternum. In all these cases there was a preternatural excitement of the part.

There is supposed to be 25 ℔ of Blood in an ordinary sized man.

2. The irritation of the arteries, that they possess this power I infer, from our not being able to keep any part or parts quiet in certain positions: as for instance the foot or leg being placed in a certain position, will keep constantly in motion; this is no doubt owing to the irritability of the arteries. from their being destitute of blood from the sudden stoppage of blood in a divided artery, which appears to

arise

arise from the contraction of the fibres: from experiments made upon living animals. and from their being active in sleep.

When there is no blood in the radial artery the pulse may be felt ~~in the temporal artery~~.

I have been more particular describing the cause of the irritation of the arteries, because the phenomena of fever, which I shall treat of hereafter is founded upon it, as well as some other circumstances which I shall mention.

3. Of the powers that move the Blood in the Veins. The veins. from the irritation of the blood in them. from respiration. from the pressure of the muscles upon them. from the pulsation of the contiguous arteries. from the mixture of lymph with the blood which they contain. from their irritability. (To this irritability of the veins Dr Haller bears an unwilling testimony) from the inflammation which is sometimes excited in venesection. (This indicates that the veins possess a contractible power) from the much greater distance the blood is thrown in venesection in a diseased state. than in an healthy state. from the sudden closing of the orifice in some persons which may be opened again by applying warm water to the part.

The stagnation & reflux of the blood are the causes why Children start. throw their arms & legs in sleep. &c. There are different degrees of velocity of the

a. See page 87 line 16.

of the blood in the veins in different parts of the body it is slowest in the Brain!

IV. The advantages or uses of the circulation of the

Blood.

1. It supports the action of the body. brain
2. It serves to convey heat to all the different parts.
3. It gives humidity to the body.
4. It affords nourishment to the body. either directly or indirectly.
5. It gives a tension to the nervous system.
6. It supplies a nervous fluid which arises probable from the friction of the blood in the blood vessels. a. There may be sensation without motion, and motion without sensation in the brain.

The veins in the brain do not emanate. The brain & nerves are unimpaired in Tetanus.

V. Of the Nervous System.

I. Of the Brain.

The brain & nerves possess certain general actions and some specific.

1. It is of great importances to life. The bony case which covers it, its firmness & its rotundity all shew the wisdom of him who formed it.

Its rotundity is a very great safe guard. I once extracted a bullet out of a soldier's head after the battle at Trenton which entered in the right side of the head, & penetrated as far as the bone, & went round under the skin to the opposite side; from whence I extracted it. the cranium itself was not

a There is what is called the Facial angle;
& the more acute this angle in any person the
less intellect he is said to possess.

was not the least injured. & the ball was considerably flattened.

2. Skulls are of different forms in different nations: and there are also a great variety in Skulls of the same nation. A person who has a projecting forehead is said to have an extensive mind. a

3. The brain is composed of vessels which convey a serous kind of fluid or lymph: but which becomes so much dilated in diseases as to admit red blood.

4. The arteries of the brain posses less elasticity than those of the other parts of the body. They are distributed chiefly upon the Pia Mater.

5. Dr Haller says that ⅓ of the blood, & Dr Monro that ⅙ is sent to the brain. There are no lymphaties in the human brain. All the nerves of the body come from the brain.

The brain has three kinds of motion.

1. That which arises from the pulsation of the arteries; this is denied by some Physiologists.

2. In every act of respiration the brain is moved. Morgagni relates the case of a man which proves this fact. viz. that during inspiration the mans face became pale, & during expiration returned to its natural colour.

3. It has a motion analogous to muscular contraction. The Cerebellum has but little sensibility; a red hot iron has been thrust thro' it without inducing death.

The brain

a Intellect is said also to depend in some measure upon the density of the brain.

The brain of man in proportion to his size is twenty four times greater than that of an ox. Intellect is in proportion to the size of the brain: a this I infer. 1. From its being suspended by ligatures round the nerves.

2. From accidents happening to the vertebra of the neck.

3. From the disease of the brain; sensation is suspended.

Four of the five senses are seated in the brain, viz. hearing, seeing, smelling & taste. It is also the seat of the mind. Descartes supposes the mind to be seated in the pineal gland. Dr Willis. that it is seated in the corpora striata. & Dr Gall supposes it fill two distinct organs. & that the right side of the brain is more excised than the other. Dr Heartly supposes the medullary part of the brain to be its seat; he calls it the organ of organs. I do not beleive that the mind is situated in one particular spot. as some do, but I beleive with Dr Haller that it is diffused throughout the brain: I with Dr Heartly that its operations may be confined to medullary part. I beleive it is often translated from one side of the brain to the other by disease.

III. Of the Nerves.

They are a continuation of the Brain & Medulla Spinalis. All sensation is conveyed thro' them to the Brain.

They do not communicate with each other as the bloodvessels do. & they are smaller in man according

a Nerves enter into parts not possessed of sensibility.
+ This is particularly the case in those nerves which go to the Heart & Stomach.

b Except in the Stomach which has more nerves & has less sensibility & the testicle which has few nerves & possesses great sensibility

The course of the nerves is uniform in every person. This is not the case with the blood vessels.

c Parts which have no sensibility in a state of health are very sensible when diseased; thus the ligaments when twisted occasion exquisite pain.

according to his size, than in any other animal.[a]
The smaller the nerves the more acute the pain.
The pain felt from a dislocated thumb is much
greater than that felt from a dislocated thigh.
They are provided with ganglia. supposed by Dr
Monro to be little brains.[+] The more nerves there
are the more sensible the part.[b] Nerves sent to
involuntary organs are more sensible & more
irritable than in other parts.

Between all the viscera there is an intercommunion of sensation.

There are a set of nerves which are formed for the touch. taste &c. the are called sensual the others are called Common.

There are also a set of nerves. for sensation & motion. There is an intimate connection of the mind with the nerves. the greater the quantity of the nerves. the more extensive the mind.

There are some nerves which serve for very important functions of the body. as digestion &c. Digestion & secretion cannot go on without them.

It takes much longer time for a nerve to unite than muscles or bloodvessels. Numerous as the nerves are if they were collected together into a mass. they would not be as large as my little finger.

Of the Senses.

Do all the parts posses sensibility?
I do not beleive with Dr Haller. that they are not all sensible; but in a certain degree I believe they are.[c] A tumour formed on a painful part.

is

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a Impressions are not always accompanied with sensation, as those medicines which act upon the kidneys producing a greater secretion of urine & those which act upon the intestines, likewise impressions acting upon the heart: did all those impressions produce sensation, the consequences would be very disagreable if not fatal.

Impressions do not always produce sensation in the parts to which they are applied as in the stone

b Impressions of certain force destroy sensation.

c If a hair is plucked from the head of a person & a blow given at the same time he will only feel the blow. If after a Dog has taken nux vomica he is severely whipped it will prevent its operation.

d Two thoughts of equal force striking the mind at the same time produces a thought different from either. This fact is of considerable importance in Therapeutics.

e Thus itching in the extremety of a limb is felt some time after amputation.

is not painful. except when it is prefsed. & the pain is not very great. d

Pulsation in the heart. excites no sensation in a healthy person.

Laws of Sensation.

1. Sensations are in a certain degree according to the force of the impreſsions made upon the nerves in the brain. b

2. They excite sensations in proportion to their duration.

3. Only one sensation is excited in the mind at once. When a great many stimuli act upon the body at the same time, the most powerful one will prevail. c

4. A number of impreſsions made at once, make the sensation a compound of them all. Thus if a boy paints his top a variety of colours, when he spins it, one colour only is seen, which is a compound of them all. d.

5. Certain sensations continue for some minutes, may even for half an hour, after the impreſsion was made. It is by this law, that we explain the way in which a circle of fire is produced, by turning a live coal, round & round several times. e.

6. Sensation is destroy'd according to the length of the impreſsions.

7. Sensations are renewable by imagination & by memory.

8. They are very much influenced by habit. The effects of habit upon our sensations are as follows.

1. Certain

Impressions producing pleasurable sensations
in youth, by repetition lose that power in old
age. Thus 62 degrees of heat which create
pleasure to a young man pain an old man.

1. Certain sensations which are painful becomes much less so by habit, & repetition. This is remarkabley the case in the different effects of heat and cold. The hardneſs of a Savage life becomes agreeable by habit.

2. Sensations originally painful, become pleasant by habit. as the use of tobacco. Cold warm bath &c. are painful at firſt, but soon become pleasant.

3. Certain sensations originally pleasant become painful by repetition. as a drop of water falling on a person's head at first, feels pleasand, but after continuing it, for some time, it becomes painful.

4. Some sensations are entirely destroyd by repetition. This is very remarkable in the administration of Medicine; hence the neceſsity of changing them. in all deseases of a chronic nature

5. Sensations are influenced by a difference in age, in their powers of exciting pleasure or pain.

6. Certain sensations are influenced by comparison. Thus a linnen draper can tell the quality of Linnen, by running his fingers over them.

7. Sensations are influenced by a certain order or succeſsion.

8. Two or more sensations, made at the same time, appear confused or connected together. This is what is called Association.

Of the Muscles and Tendons.

1. Of their Structure.

The muscles are composed of small fibres collected together, of a red colour. These are divided into smaller fibrils, which by their contractions, perform

x Convulsion

they do not appear to be a continuation of nerve

° Shorter

a Thus the bent positions in bed

6 If we wish to increase our strength we must care to cultivate our intellect.

form all the motions of the human body. They are connected & invested with cellular membrane.

There can be no spasm without muscularity. They extend more or less to all parts of the body; some of them terminate in tendons, which are attached to bones, whilst others terminate in what is called a tendinous expansion. They are all provided with nerves, arteries, & veins by which they are supplied. There are different kinds of muscles: when they contract, they become broader their strength is not according to their weight.

The tendons are made up of different kinds of matter than that of the muscles. They are smaller, stronger, firmer & of a white glistening colour, having no contractibility, & little or no sensibility in a sound state. Their use is to connect the muscles to the bones. No examination either chemical or mechanical has ever proved to us the origin of muscular motion.

The extensor tendons are much weaker than the flexors. The hollow muscles have the most irritability, viz. the heart, intestines &c. It is owing to the latter irritability of the intestines that the faeces are discharged after death.

The different muscles are acted upon by different stimuli. For instance, the lungs is acted upon by air, the stomach by food, & the heart by the blood.

Their irritability is greater in proportion to the weakness of intellect: of course their irritability is the greatest in ignorant people. 6

There are upwards of four hundred muscles in the human body. Man is the weakest of all animals in proportion to his size, owing to his having a less number of

Irritability increases with old age

ber of muscles than they have.

Their force is much increased by the action of stimuli upon them. External & internal stimuli both have a very great effect upon it. The action of the Will increases their strength.

Animals possess the power of reintegration, man does not. Man renews but little more than his hair, nails, & bones: whilst other animals possess the power of renewing the whole of their bodies.

Sensation ends with life, irritation not till after death.

Some medicines which are sensible have no irritation, & some which have irritation have no sensibility.

2. Of the action of the Muscles.

1. In order that muscles may act, it is necessary that there should be a free communication between them & the brain by means of the nerves.
2. That there should be a communication between them & the heart, by means of the arteries & veins.
3. It is necessary that there should be a free communication between the muscles & veins. Thus we must say with Dr Whytt, the integrity of the nerves, muscles, & arteries is necessary to muscular motion.
4. It is necessary that they should not be kept too long in a tense, or a relaxed state.

Of the effects of Habit upon them.

1. It makes them much more correct in their actions.

a. The influence of habit upon muscles is very great; thus actions become correct from repetition, as a child who steps with uncertainty & difficulty in his first attempts to walk after a number of attempts learns to walk correctly.

b. As in Dancing &c.

c. Thus it has been said that a butcher who will lift a calf every day may at the end of the year lift a

d. Thus the wings of wild fowl being more constantly in motion than the tame fowl so they are of a much darker colour.

e. A man in confinement who had accustomed himself to repeat count the hours as they were tolled by a neighbouring clock, repeated them ever after from habit when out of the sound of a clock.

actions.
2. The tone of the muscles influenced by habit.
3. These actions become more regular from repetition.(a) The facility & celerity by which muscles perform their actions, is increased by repetition.(b) In some instances it is lessened.
4. Repetition increases the strength of them.(c) They become of a dark colour when long exercised.(d) Hence the dark colour of venison, & the fair colour of poultry. Repetition originally voluntary becomes involuntary.(e) Some of the actions of the body are originally voluntary.

Muscles are the instruments of Motion; the powers that move them are either voluntary involuntary or mixed.

The voluntary are mastication, deglutition & speech.
The involuntary are called vital, from their actions being so completely necessary to life. viz. the heart, blood vessels & brain.
The mixed, is respiration.

There is no mind without brain, and consequently no will without brain. The involuntary action of Respiration moves the heart, the heart the brain, the brain the nerves, the nerves the whole body, which gives rise to muscular motion. All actions are at first involuntary & are produced by the action of stimuli upon them.

VII. Of the Sympathies of the different parts of the body to each other.

Sympathy is the result of the wise and useful relationship of parts to each other: it was under-

-d subservient

a. By ~~contiguous~~ continuous sympathy is meant the intercommunion of sensation which is kept up between different parts by the continuation of a substance of a different nature. Thus the same membrane which lines the internal surface of the bladder is continued thro the urethra to the glans penis; & this accounts for the itching which is felt in the glans penis in the disease of a stone in the bladder

Error. This should have been entered on the next blank page. ☞

6. An instance of non reciprocal sympathy.
That disease called Cynanche Parotidea sometimes occasions a swelling of the testes but the swelling of the testes never occasions any affection of the Parotid gland

ed subservient to the human body in order that the different functions might be performed in a proper manner.

Sympathy is divided into two classes, viz. continuous and contiguous.

1. By continuous sympathy I mean the intercommunion of sensation which is kept up by the different parts which are seperated from each other by means of the nerves.

Continuous or nervous sympathy is divided into reciprocal, nonreciprocal & inverse.

The mutual action of the brain upon the Stomach & Stomach upon the brain is reciprocal. For instance, an headache will cause a sick stomach, & vice versa.

The action of the kidneys when diseased upon the Stomach is nonreciprocal (b) The kidneys when diseased produce a sick stomach: but disease of the Stomach does not effect the kidneys; hence they are called nonreciprocal.

The morbid excitement of the lungs which is manifested by coughing &c. is an inverse.

The sympathy of the breast & uterus to each other arises from their receiving their blood from the same artery. viz. the Epigastric which is a branch of the Iliac artery. An itching of the glans penis calculous diseases, is owing to a continuation of the same membrane, into the urethra as that of the bladder. Dr Hunter calls this delusive sympathy. I call it an error sensus.

By

As an instance of contiguous sympathy, we know that an inflamation of that part of the peritonium covering the kidneys occasions dirian in the kidneys

Bark acts upon the system from its action upon the blood vessels of the stomach

The lungs sympathise with the trachea since the use of emetics in cynanche and catarrh.

There is a sort of sympathy called Idiosyncrasy; it is instanced in some persons fainting at the sight of a cat others at the smell of cheese

There is also a sort of sympathy called association. A man always felt an inclination to void urine whenever he heard the sound of a bag-pipe.

The brain is compared to a city which can be approached by numerous roads paths subterraneanean passages & thro the air by balloons. See (a) on the next page but one on the sense of touch.

2. By contiguous sympathy. I mean that intercommunion of substance which takes place between the different parts of the body contiguous to each other. Thus the pain which we feel in our teeth from scratching a piece of slate or wood is the sympathy of contiguity.

Motions are most rapid thro' the nervous system, next thro' the skin, next the blood vessels, & slowest in the Lymphatics.

The principal Sympathies are.

1. The brain, it has an extensive sympathy, viz. with all the senses, with the stomach, liver, spleen, feet, all the muscles, & the passions of the mind &c.

2. The Stomach, it sympathizes with the brain, tongue, intestines, heart, & mind.

3. The Liver, it sympathizes with the stomach, bowels, lungs, shoulders, limbs, diaphragm and rectum.

4. The Lungs. they sympathize with the skin and Genitals.

5. The Diaphragm. it sympathizes with the brain, stomach, muscles, of the face, & membranes of the nose, &c. The eyes sympathize with each other and with the head; the rectum with the body.

6. The Teeth. sympathize with the head stomach, lungs, & the whole nervous system.

7. The Bladder. sympathizes with the urethra. the palms of the hands, & the soles of the feet: hence the cause of burning in the hands & feet from

ulcers

ulcers in the Bladder. The urethra with the testicles.

The following remarks should be attended to.

1. Many sympathies are induced by disease, which do not exist in health.
2. Many of the sympathies which existed in health are suspended by disease.
3. The sympathies differ according to the difference in their predispositions.
4. They differ in different ages & sexes. The sympathies of the stomach & intestines are much greater in Infancy than in manhood.
5. They differ in different years in the same diseases.
6. They differ in different seasons & in different climates.

By knowing the sympathies which exist between the different parts we cure diseases. for example by knowing the sympathy which exists between the stomach & liver we cure dispepsia: by knowing the sympathy between the rectum, uterus & bladder, we cure obstructions in the two latter by lodging medicine in the rectum only. By knowing the sympathy between the head & stomach we cure headach by an Emetic.

VII. Of the Senses.

(a) The brain may be compared to a fixed point having lines diverging from it.

There are five senses, viz. Touch, taste, hearing, seeing, & smelling. Dr Darwin adds another which he calls the sense of heat. The three first act mechanically, the others chemically.

The soles of the feet also covered with a very thick cuticle, are yet very keenly sensible; this is very evident from tickling them, hence the propriety of applying cataplasms to them in some diseases

II. The sense of touch is not confined to the ends of the fingers only, as some suppose; it extends to all the parts of the body. There is a sense of touch by which we distinguish hardness, softness, roughness, smoothness, levity, weight, heat, cold, pleasure & pain &c. Hunger & thirst are produced by the sensation of touch.

The peculiarities of the organs of this sense are,

1. The whole external skin is called Epidermis, it is thinnest on the lips & glans penis, & thickest on the soles of the feet. Its sensibility is not in proportion to the thickness of it upon the soles of the feet.

2. Beneath the cuticle & connected to it, is a soft pulpy substance called rete Malpigianum or Mucosum. It is the seat of the blackness in Negroes.

3. Underneath this, lies the true Skin.

4. Connected with the true skin are small glands which go to the cutis: & also sebaceous glands, which pour forth a mucous fluid as in the groin, armpits, &c.

5. The hair comes from the cellular substance, underneath the Skin.

6. The cuticle & cutis are not confined to the external parts only, viz. as in the anus, urethra, vagina, mouth &c.

7. The sense of touch is greatly influenced by the blood vessels, which follow the nerves, the more numerous the blood vessels the greater the sensation. Sensations are more or less acute according to the fulness and the tension of the blood vessels except the sense of touch, which is greatest after fasting; as in the fingers, lips, & in the breast of females.

8. There are a set of organs for the sense of touch which differ from those of common sensation: as the

9. The sense

Blind people have been able to distinguish colours by the sense of touch.

a. Hence the propriety of using all the fingers in feeling the cube.

Molineax proposed this query to his friend Locke. Suppose a blind person who had been in the habit of feeling a ball & a cube of the same metal and nearly the same size so as to be ready to be distinguished by sight would he be able to distinguish the one from the other by sight. Locke could not answer.

Helvetius considers the sense of touch as a more distinguishing characteristic of man than reason or speech.

9. The sense of touch is much greater in the extremities of fingers, than in any other parts of the body. The nerves which terminate in the extremities of the fingers are preserved by the nails which are placed behind them. Perhaps the nails serve another purpose that of acting as reverberatories.

10. The sense of touch is most perfect when the thumb and four fingers are all acted upon at the same time.(a)

The lips are next in the sensation of touch. from habit they acquire their preference of sensibility, over the sensibility of the Toes. I have read of persons who could tell every card in a pack by the sense of touch.

The sense of touch may be corrected.

1. By putting the hand in warm water.
2. By rubbing the fingers on a rough body.
3. By motion. The heat and coldness of water are felt most sensible by moveing the hand backward & forward in it.

Abortions happen from the sense of touch. The sense of touch is the source of Instinct.

III. The sense of taste is seated only within the tongue. The tongue abounds in bloodvessels, nerves, lymphatics, & muscles. It has an Artery & vein, with four muscles on each side. The tip and edges of it, only are used for the sense of taste. The palate & fauces distinguish some objects of taste, but they should not be considered as particularly necessary to it. The nerves project from it in small papilla, the more prominent the papilla, the more acute the sense of taste. It is supplied with nerves from the eighth & ninth pair of the head & from the third branch of the fifth pair, the latter imparts the sense of taste.

Ale

A Wine merchant of Philadelphia was able to distinguish the wine of every Parish in the Island of Madeira by the nice of taste. Tasting cheese occasionally renders taste more acute hence Wine Merchants who taste a great variety of wines in a short time make use of cheese.

The sense of taste is sometimes changed by disease, hence a Lady who was ill declared that the Port wine she was taking imparted to her tongue the taste of sugar

I knew an instance of the sense of taste being transferred to the stomach.

All tastes are excited by the solution of sapid bodies on the tongue. It is influenced by the various temperatures of the weather; by habit or repetition. The variety of tastes are according to the variety of impressions made upon the tongue. Taste may be transfered. I have read of a boy, born without a tongue who had a high sensation of taste, in his mouth! I have seen a tounge half red & half white in a palsey.

Dr Hartley says that bitters applied to the fungous of the brain of a man produced the sensation of bitter upon the tounge.

Taste is not an independent sense, it is connected with the senses of smelling & seeing, it has also an intimate connection with all parts of the body. The sense of taste serves to direct us in the choice of our aliments. From its being abused by civilized people, in the use of tobacco, ardent spirits &c. it is most enjoyd by savages & animals. It is absent in some animals.

The sense of Smell is produced by a soft pulpous membrane, full of pores which covers the inside of the nose & is called the pituita or Schneidesian membrane. Some say it is produced from the septum of the Os Ethmoides & Maxillary Sinus. To this I object. 1. Because if it were so some animals would have those parts very large. which is not the case. 2. Because in animals of the same size, which differ in this sense, the Sinus & septum are alike. 3 All sinuses have a winding passage into the nose: the ossa spongiosa are its seat.

4. Because

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a It is necessary to the sense of smelling that the internal surface of the nose be kept constantly moist

The odours of the flowers on the banks of a river at Rio Janeiro was so strong as to be perceived by a ships company at the distance of twelve miles & to prevent their smelling the tar of the ship.

The odour of the sweet-scented shrub of South Carolina has been perceived a great distance at sea. Thirty miles or more.

4. Because the air which enters appears to be discharged in smelling.

The mucous which lines the nose appears to be poured out from the vessels. which run thro' the nose, it adds greatly to the sense of smelling - the numerous blood vessels in the internal part of the nose adds very much to the sense of smelling. For the purpose of smelling it is necessary that there should be a free inspiration. The nerves are much larger in Smelling, than those of taste. Short inspirations & shutting the mouth which prevents the effluvia from being wasted, renders the sense of Smelling most acute. I have heard of a Lady who said that every thing she smelled of was very fatid, this was no doubt owing to an error sensus, for why may there not be an error sensus, as well as an error loci. A stone in the Bladder, ought to produce pain, but it commonly causes an itching of the Glans-penis.

The Sources of Odour are much more numerous than has been supposed. They arise even from metals & stones. In order that odours may act it is necessary that they should arise in a gaseous form. Putrid odours remain a long while in the clothes of people. The oil of Damask rose, will scent a room for a considerable time; a grain of Musk will scent a large room for several years. The urine of a Skunk will scent a whole township for a con-

140 A small quantity of those substances which
smell offensively are sometimes agreeable in
articles of diet. A small quantity of
Asafoetida is considered as an agreeable
addition to beef-steak. And connoisseurs
consider the flavour of a particular kind
of wine improved by the urine of a cat.
a Odours are said to have an effect on
the moral faculty. In this way some
account for the uncommon viciousness
of the people inhabiting the neighbourhood
of mount Vesuvius they say it is
owing to the smell of sulphur from its
Volcanic eruptions.
b Turbulent indeed must be those
passions that will not be quelled by a
walk in a flower garden in the month
of May or June.
c Some animals at those seasons of the
year in which the sexual appetite is
excited are brought together by their acute
sense of smell.

considerable time. Animal effluvia, as we have seen in the Jail & Hospital Fevers, has often been contained in the clothes of persons for many months & then become infectious.

The sense of smell is not entirely independent, is aided by the eye in looking at it, & by the nose; sneezing rouses the nerves from their torpidity, & makes the sense of smelling more acute. Strong odours often produce tears. The advantage which we derive from the sense of smell is very great, by it we distinguish some of our aliments and drinks. A Merchant in Madeira can tell the wine made in the different towns on that Island by the smell of them. Odours have an influence upon the morals (a) It has an extensive effect in certain diseases. Odours have a powerful influence on the mind (b) Pleasant odours, we must admit have a very pleasant effect upon the Morals. It is a happy circumstance that our smelling is produced by an involuntary inspiration. The Hog is said to possess a high degree of the sense of smell: it is by this that he finds his food under ground. The acuteness of the sense of smell, serves another purpose: viz. that of bringing the sexes together &c. The long application of the causes fatigue. The sense of smelling has an extensive connection with the whole system. The dog is preeminent in the

sense

* A story is related of an Elephant, who from among a number of pieces of money could select one by the sense of smelling only from its having passed thro his masters hand.

a I have heard of a man who could distinguish his wife from any other woman by her smell & of another person who could distinguish a virgin from a married woman by the same sense!

sense of smell, is more acute in the hound, on account of the extent of his snout & the largeness of the Osa Spongiosa. The proboscis of the Elephant is an extension of the olfactory nerves.*

Persons who live in the Country have this sense more acute than those who live in the city.

Henery Smith of Northampton County in the State of Pennsylvania, it is said could follow his Brothers, when they were twenty miles off from him, by their perspiration.a

There are originally as many odours as colours viz. seven. Many odours are increased from their original state by being diluted. Agreeable odours are much increased by smelling a disagreeable one beforehand. Same things emit a smell by being rubbed. The sources of odours are innumerable.

IV. The sense of Seeing. To do justice to this sense it would require a whole course of Lectures. This important sense is committed to two distinct organs of vision called the Eyes, but exactly alike in every respect. So far an even number, no animal possesses originally an odd Eye.

Vision is most acute in birds, next in man, next the ape, next quadrupeds least of all in Whales. The size of the eye is an inverse ratio to the size of the animal. it is least in the

Whale.

930

whale;

The eyes have muscles which move them, & glands which pour forth a liquid, to facilitate their motion. The eyelids have six coats. viz. 1. The cuticle. 2. The true skin. 3. The cellular substance. 4. Muscular expansion. 5. A strong expansion. 6. A fine membrane which lines the inside of the eye lid. The eye has the conjunctiva, which is a continuation of the cuticle. It covers the whole anterior part of the eye & connects it to the eyelid, & is transparent in health. The sclerotica, or the white of the eye, it has few bloodvessels, & but little sensibility: The cornea is situated in the middle of the eye, it is a distinct membrane, transparent, & composed of several lamellæ. with water between, & is destitute of nerves: The choroidea which lies under the sclerotica, and has numerous small arteries, & nerves connected to it: The iris, it is passive only in the contraction of the pupil, behind it is called the uvea & the opening in the middle is called the pupil, and the retina which is a continuation of the medulla of the optic nerve. It has three humours, viz. the vitreous, crystalline, & aqueous. The vitreous is situated in the posterior part of the eye; the crystaline behind the uvea: the aqueous is externally transparent, and is seated between the

uvea

ueal crystalline Lens. Its use is to promote the
pellucidity of the cornea. & defend the parts from
injury. The retina is the focus of vision: one foot
from the eye the vision is most acute. There are
seven different species of colour. which may ea-
sily be remembered by a certain word which they
make when transposed, viz: Vibgyor. I mention them
because I think them necessary in explaning the
nature of vision. Where there is no vision there
is no colours. White is a compound of all the col-
ours. Black absorbs them all. Squinting is occa-
sioned by the weakness of the muscles of the eye.
The Revd. G. Whitfield squinted in one eye; it was
occasioned by his mother putting a black patch
over his nose on a sore while he was young, he was
constantly looking at it and by that means twist-
ed the eye in its Orbit. The pupil of the eye di-
lates and contracts according to the distance &
nearness of the object. It expands in the dark.
the greater the ~~expansion~~ darkness the greater
the expansion; sudden light is very unfriend
ly to it. The pupil is grey & blue in people of the
nothern climates, & black in the Southern. The
Indians of North America are exceptions. they are
black, but I believe they are not the aborigines of
that part. The evidence of reason, is called seeing.
It is a curious fact that all objects are painted in
an inverted direction position upon the retina.
The eye is the predominating figure of the face.
it

Some animals see well in the dark owing to their having a large dilatable pupil.

a Avoid pressing upon the eye when washing this tends to flatten the cornea.
Avoid reading by too scanty or too great a light
Varying the size of the print of the books we read tends to preserve sight.

it is the mirror of the Soul, and a master piece of workmanship, to the framer of it. Vision is less true in one eye in distance and direction than with two. It is more acute in one eye, than both, hence the reason why watchmakes use but one eye. A large proportion of the stimulus which supports life, is carried to it, by means of the eyes. A life of study would not discover the goodness & excellency of the deity in forming the eye.

In order to preserve the Eyes.(a)

Keep them fixed in the orbits that the muscles — may not be stretched, or constantly in motion avoid reading upon your back in bed: & by candle light. & never look perpendicularly down upon your book. receive the light side ways & over your shoulders. avoid prefsing your eyes when you wash your face. They are preserved by blacking above & below the eyes; by the early use of Spectacles. Instead of reading & writing a night, go to bed. and get up an hour or two before day. In extreme old age vision is — sometimes revived. after having been extinguished for some years.

Human life before the deluge was like unto vegitables it renewed itself every hundred years!

V. The sense of hearing). I shall. 1. Consider the nature of sound. 2. The structure of the ear.

1. Sounds are certain tremors or vibrations which proceed from the percussion of a sonorous body. Sound may be divided into sound. properly so called.

Noise

In a sick room we should be all ear all eye be. that we may be all mind

There are some sounds so loud & others so small that some persons cannot hear them, the reason they do not is because there is no corresponding chord in the Cochlea.

noise. By sound, I mean that which arises from musical instruments. By noise, that which arises from explosions. The earth as well as the air is the vehicle of knowledge. (A bell struck with a hammer in an exhausted receiver will emit no sound) At the battle of Mud Island eight miles below this City, a British Soldier at Eastown seventy miles off. Said that he knew Philadelphia was taken at such a time; he was asked how he knew he said that he stuck his penknife in the ground, & by putting his ear to it, he could hear very distinctly the firing, but that he could not know. In a few days news came, that the City was taken, & at the very time which the Soldier had specified.

Water is a vehicle of knowledge, divers can hear a ship sailing at a great distance.

Air is necessary for sounds, they are less distinct in cloudy weather. Sounds whether great or small travel with the same velocity: its force is increased by passing thro' spiral holes. Sounds which strike at the distance of 63 or 64 feet, echo back one syllable: if 127 feet, they echo back two syllables: if 190 feet, three syllables. &c. The different states of the Atmosphere has an effect upon the number of syllables echoed back.

2. Structure of the ear: the external ear, or meatus auditorious externus is divided into its cavity and labyrinth. The external ear collects the rays of sound & conveys them to the internal part. If the ear

project

158 Hearing is not an independent sense it derives assistance from some of the others. We hear better after swiging d with our mouth open; this last is perhaps by a continuation of substance (vera sympathy) particularly from the teeth.

Many deaf people hear whilst riding over stone. I have heard of another who heard better whilst some one was beating a drum. A Gentleman in Virginia could hear conversation only whilst when there was vocal or instrumental music in the room This is owing to the tympani by tympani becoming so much relaxed, as not to hear small sounds. This is the reason why Millers are hard of hearing.

a. Thus when we hear an unusual sound we do not know from whence it comes, this is exemplified in an Earthquake.

6. There are some sounds so great & others so small as not to find a corresponding chord in the spiral lamina of the cochlea.
A Mexican Gentleman who attended a course of lectures in this University informed me that when a boy, he was in a steeple where twelve bells were ringing & being rude & making a noise with some other boys who were with him, a woman who lived in a room adjoining the steeple came in & reprimanded them, saying that they made so much noise she could not hear what was going forward in her own house.

projects, the hearing is more acute: the Indians hear more acute on that account. Persons who are moderately deaf, may have their hearing improved by surrounding the ear with the hollow of the hand.

The division of the Tympanum serves a two fold purpose. one to convey simple sounds, the other to secrete the words. Thro' the Eustachian tube, the membrane called the pituita passes to the tympanum. The labyrinth is divided into vestibulum, three semilunar canals, & the cochlea.

Hearing may be defined to be a harmonical vibration or trembling of the ear. Infants hear very indifferently, from the quantity of mucus, which lies on the membrana tympani. We learn our directions of sound by experience.(a) I know a Lady in this City who can hear the ticking of a watch or Clock, but cannot hear the beating of a drum: she can also hear the noise made by sticking a pin thro' paper, and cannot hear the report of a Cannon.(b)

It is not independent, it is indebted to the nose, eyes & mouth; it is more acute when the breathing is suspended for a short time. We hear imperfectly when we yawn because the air is obstructed in its passage thro' the Eustachian Tube. The hearing is also subject to an error sensus. It has been translated sometimes. Dr Haller relates the case of a person, who whenever he heard a drum beat seizes with a pain in his bowels. There is an intimate connection between the ear & human voice.

Of the advantages of the Senses combined together.

The senses combined together, form a large proportion of the

Through the medium of the senses we receive a great part of that stimuli which supports animal life.

The power to move fixible the impressions on our senses the life strength of mind we posses.

A belief in Ghosts is contrary to reason, for both can'd material being nee an immaterial being. The senses should be aided by reason. Thus no person has ever felt a Ghost. They have only been seen, we should never trust to one of our senses.

tion of the stimuli that is necessary to Animal life.
We are indebted to our senses for our minds & all our moral, intellectual & social enjoyments: without the senses there can be no sensation. "Nihil est intellectu, quod non prius fuit in sensu," is as much a truth, as that we did not make ourselves.
Where there is a loss of hearing there is generally a loss of intellect. A certain gentleman in his Will mentioned his Eyesight & hearing & valued them at 10.000 £. each.

How far our senses deceive us, (and I shall endeavour to prove that this fallacy is owing to our inspections being imperfect, & not to a deception of the senses) I shall mention under four heads.

1. Many things are called deceptions from their not being distinctly seen, or felt. Spectres have been seen, & heard, but have never been felt.
2. Many of our perceptions are acquired from habit.
3. From the ignorance of the laws of nature.
4. From the diseases of the senses. I wish you, Gentlemen, always to recollect the dependence of the senses upon each other, and the origin & connection which reason & the evidence of testimony have upon the senses, & upon each other. In the language of the Scriptures I say "what God hath joined together let no man put asunder." The sense of touch absolutely necessary to the correctness of seeing & hearing.

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VIII. Of the faculties and operations of the human Mind.

The extent of the moral powers & habits in men is unknown. It is not improbable, but the human mind contains principles of virtue, which have never yet been excited into action. I am not so sanguine as to suppose that it is possible for man to acquire so much perfection, from science, religion, liberty, & good government as to cease to be mortal; but I am fully persuaded, that from the combined action of causes, which operate at once upon the reason, the moral faculty, the blood & the heart, it is possible to produce such a change in his moral character, as shall raise him to a resemblance of angels, nay, more to the likeness of God himself.

I shall in the first place enquire into the nature of the mind. Secondly, Into its faculties & capacities, & Thirdly, Into its operations.

I. I mean the first head, viz. with respect to the nature of the mind. there are four different opinions.

1. That the mind is immaterial & that it is totally different from the body, & exists entirely independent of it. This is both an ancient & universal opinion.

2. That there are but two parts, Spirit and Body; and that the Spirit to be matter, exquisitely refined, & capable of producing existence seperate from the body, & is annexed to the brain in a just position.

3 That

3. That it is a germ or seed in which are contained the rudiments of the body & mind, which lies dormant in the brain; & at the day of judgment arises & forms a new creature.

4. That there is no such thing as mind materiel or immaterial; but it is the effect of impressions external or internal made upon the brain.

There is no necessary connection between immateriality & immortality. Spirit possesses no self existence, it is materiel. I believe in the immortality of the soul.

III. The faculties of the human mind are instinct, memory, immagination, will, understanding, principle of Faith, and passions. The faculties of the mind have been further divided into active & passive. I do not admit of it being divided into several parts. The mind is an unit but is moved by its faculties. It is said the more active, & the more elevated the Skull the greater the intellect.

Man possesses the most intellect: next the Elephant, & the Goose possesses the least. The faculties & operations of the human mind, are more certain than than any of the sciences. It is the most useful of all sciences, & by it we are elevated above all other animals.

The mind & body were formed at the same time & both remained quiescent, untill it pleased God, to breathe the "air of lives" into the body. Motions are necessary to produce thought. We think involuntary because our thoughts are produced by those causes which excite life.

Instinct

+ Or Reminiscence.

Instinct; it differs from understanding, that is a native faculty of the Mind. Instinct is the effect of impressions made upon it before birth; & it declines only, but is never lost entirely. When it declines memory sometimes supplies its place. Instinct, in brutes, is intended to supply the place of those faculties which belong exclusively to the human mind.

Memory; this is most useful, & necessary of all the faculties of the mind. Where there is no mind, there is no memory. There are two different grades of it. The memory of ideas constitutes the highest grade of it. The lowest grade of it is reminiscence; it is imployd in Infancy in the idea of things. Ideas which are recalled in the mind, are said to be recollected. This is called recollection+.

We learn more in the three first years of life, than in any thirty years afterwards. Memory is a generic term: there is a memory for faces, places, words, names, numbers, & ideas. The Rev. Mr. Whitfield never forgot the face of a person, which he had once seen.

The memory of places, belongs mostly to brutes. Children from nature, & Players from habit have a memory for words.

The memory for names was eminently possessed by Cyrus. he never forgot the name of any person that he heard.

Some are possessed with a memory for numbers. I have heard of a poor man, who could tell the number of words contained in a Sermon, which he heard preached.

There is a-

There is a memory for ideas; it is by this we discern the civilized person from the savage.

Extent of memory depends on Civilization. The loss of it is called amnesia.

Imagination; it is called the representation of the mind. It is the seat of perception, the store house of judgement & reasoning. It differs from Memory, in receiving sensations, in embracing future things; in embracing immaginary as well as future; in recollecting ideas past & future &c. There is no invention without imagination. Memory may be compared to history & imagination to a painting. Imagination & fancy are different; fancy occupies itself in phantoms, imagination in realities. Ideas of imagination are received from the Eyes & Ears. Understanding is that in which impressions are received both externally & internally. It is a very essential faculty.

Will: it is that faculty which impells us to act or reject things. It most commonly applied to Moral Good or Evil. It embraces intellectual truth, thro' the understanding, & embraces moral evil thro' the passions. Agent & patient belong to it. It derives its source from the memory & imagination.

The principal of Faith: it is as much an innate, or natural faculty of the mind as the imagination.

I define

Man is as nercessarily a religious as a sociable ani-
-mal. There have bin instances of its abcence in some men.
This faculty is so universally prevalent that I may
venture to say there never was a sailor from Jonah to
the present time but what called upon his God in a
storm & thanked him for his deliverance.

An Atheist if confined in a dungeon for a long time
will implore the Deity for deliverance & thank him
after he has obtained it. This may be analagous to some
cases in which terror has restored a Paralytik

All men have their Gods however contemptible, some
are winds, storms, the sun, moon, &c

Man is as much by nature a praying & thank-
-giving animal as he is an eating & drinking
animal.

I define it "to be the evidence of things not seen, heard, felt, touched, tasted, not handled, but known only by the operations of the mind. Should this faculty be suspended, its company its effects, would be as bad, as the extinction of vision & ~~sight~~ hearing.

We exemplify this principle, when we are ill, by taking of Medicines which produce nausea, from the faith of our Physicians. This principle does not results from experience, but is an absolute law of nature. D^r Reed says" the unjust as well as the just live by faith" It is a more fruitful source of knowledge than reason, & its knowledge is more useful & certain than that which is derived from our reason.

Passions: they are divided into propensity, affection, and passion properly so called: they are all set in motion by the will.

The Moral faculties; they are innate, & are of three kinds, viz, the Moral faculty properly speaking, Theosophic or the Sense of Deity - and Conscience.

The Moral Faculty exercises itself in determining upon morality or immorality in the actions of others. It performs the office of a legislator, & is seated in the will. The moral faculty is as much one of the componants of the human mind as the imagination.

Theosophic, or the sense of deity, is a native principle of the human mind, and it is universal. It is often confounded with conscience, which is a distinct & independant capacity of the mind.

It is this

a Conscience is a judge of Law & not a Law-giver. It is never absent except when said to be "scared with a hot iron."

Taste is a sudden ~~conception~~ or prompt perception of beauty or deformity. It is distinct from judgement

May there not be a number of dormant faculties which will be means of happiness in a future state or will our happiness consist only in an increase of those we have.

It is this faculty which distinguishes man from other animals.

(a) Conscience acts in determining upon the morality or immorality of our own actions & not of others It acts as a judge; it is seated in the understanding: it is the centinel of the moral faculty.

Dr Clark calls it "a perpetual witness for God." It is according to the Schools, the "regula regulata non regulans." Altho it acts the part of a judge yet, it is our best friend; it preserves from injuries by preventing us from doing wrong. Conscience may be compared to a "Court of Errors & Appeals."

IIII. The operations of the Mind.

Its first principles are, perception, association, judgment, and reasoning.

They may be very easily recollected by thinking of the word PAIR, which the first letters of them spell in their natural order.

Sensation is excited by perception. Perception is that principle by which objects are identified in the mind. The term perception is synonymous to the the word conception or apprehension, which are used by some authors. A change in perception in the mind is called an Idea; the revival of ideas are sought for in Association. Thoughts are a combination of ideas. Ideas are raw materials, out of which the mind is manufactured. Brutes have reminiscence because they are void of Speech. Association

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Association, it is exactly the same thing in the Brain, that sympathy is, with other parts of the body. & it has its laws in the same manner with sympathy. Association consists in a single perception, idea, or thought, producing several other perceptions, or thoughts which unite together into a certain order. We are as liable to stop our thoughts, as we are to stop the course of the planets.

The influence of association upon the human mind is very extensive.

Words are a very fruitful source of Association. In the cure of diseases great benefit arises from a knowledge of association.

Dr Clark says that "a man who wishes to become eminent, must not only read much, study much, hear much, but must write much."

The eyes in writing increase our ideas of association. Mr Hume calls man "a bundle of habits" & by "habits" he meant associations, his deposition is a very just one.

Judgment is a perception of the similarity or dissimularity of Things. We distinguish faces by judgment, by the process of comparison.

It is very difficult in many cases to determine between simple perception & judgement.

The judgement acts as necessarily under the impression of Argument, as the senses do from the impressions made upon them.

Reason, is a higher operation of the mind than Judgement. Reason differs from judgment in this;

The most of those great things which have been done for the good of mankind have their origin in the passions, & are very great compared with those which have their origin in reason.

Attention is protracted perception.

Contemplation belongs only to men of superior powers. It belongs to genius. Bacon Sydenham & Locke were men of contemplative minds.

in this: it extends itself far beyond what it has ever experienced. Judgment never goes beyond what it has experienced. It is the highest intellectual operation of the mind. It connected with correct perception, related association, & sound judgment in its highest state; but it may be connected with unrelated association & unsound judgment. There may also be related association with unsound judgment, & sound judgment without the reasoning powers. Brutes associate, perceive & judge; but reason belongs only to man. Reason differs from Genius. Genius is Reason with wings. Reason is Genius on foot. Intuition is related to Genius. It is applied most generally to the common affairs of life. It is probably Genius, improved by habit. Reason does not belong to God.

The Minor operations are Attention, Reflection, Contemplation, and Wit.

Operations of the Will.

The will apparently, tends to more than one operation at a time; thus a woman can knit, talk, & walk at the same time by habit.

Does the Will act freely or by necessity? This must be decided by Physicians.

There is no principle of self motion in the human body. it is all produced by stimuli. The will is not free, but it acts most freely when most necessary, & vice versa. I believe in free agency as well as necessity, for all reasoning is in favour of free

agency

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a They know at this time their nurses when they see them

6. In every mechanics shop where there are apprentices we observe them engaged in their branches of the business proportioned to their years & intellect. Here we discover new judgement in Master mechanics than in many of the Principals of our seminaries of Learning.

c An old Lady in this city who might be said only to vegitate. used to observe that she had forgotten every thing but her sad.

agency. All reasoning is in favour of necessity.

Conciousness is divided into Existence, Action, Time, Place and Personal Identity. It differs from concisence, in embracing the knowledge which we have of ourselves. We are conscious of the lapse of time, from a recollection of past ideas.

The order in which the senses are evolved, in a new born infant. The first are the emotions of anger, joy &c.; about the fifth month, reminis- cence; the third year memory. The moral senses & the sense of Deity. & some degrees of Association appear about the third year. From the fifth to the tenth year the Understanding. From the fourteenth year the passions &c. The sense of taste seldom awakes before adult life. From this view of the gradual manner, in which the faculties of the mind are awakened, we are acquainted with the manner in which children should be educated. (b)

The first years of a child's life should be employ in Geography & Statistical History, & in a sense of the Supreme Being: From ten to fourteen years in learning the modern languages: From the twentieth year in learning the sciences & all the different branches of literature. By regulating education in this way we conform to the operations of the mind, as they arise from Infancy to Manhood.

The first of the faculties which decline is memory (c) it declines in forgetting names & places. Old men can generally recollect the things that happened in early life, but forget those which happened in middle life

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The faculties of men used to bodily exercise are not so soon impaired as in them who never use any.

It has been said that brutes are not progressive. this is not true. An old old horse is more sagacious than a young one.

The difference in extent of mind is in proportion to sensation, Brutes have less sensation than man. Their sense of touch is not so acute. & different brutes have other senses less acute. The brain of man is larger in proportion to his size. than the brain of brutes Man has the use of speech & has likewise fingers. Man transmits his improvements to succesive generations & so improves this succesive generations brutes can only improve during the course of one generation. Brutes have a moral faculty. They can talk of a vicious horse. They are affected by the passions. I knew a dog die of anger. They can associate & combine but are incapable of reason. They are incapable of abstract ideas. They have the advantage of man in being reasonable.

life & onwards. The imagination declines next; then the Understanding. I never knew the Moral Faculty to be obliterated in a person who had lived a religious life. A woman in this City, aged 98 years, said that she could not recollect any thing but her God.

Thus, Gentlemen, have I finished the history of the faculties & operations of the human mind: & I hope I have not failed in rendering the history of it (as I promised) as simple as the bones of the head, after an Anitomical description of them.

Comparative faculties of Brutes.

Man is an anticipating animal so is the Beaver. Man is a progressive animal; brutes are not excepting under equal circumstances. & ceteris paribus.

The principle difference between man & brutes is in the Mind. The mind is in proportion to Sensation. Men have more sensation & of course more mind than brutes. Brutes have no sense of touch; impressions on the body of brutes descend to their legs; they have no speech; they are deficient for want of fingers. First the dog, next the horse, & next the Elephant comes the nearest to man of all other animals. Brutes have reminiscence, that is, they recollect roads which they have travelled, but they have little memory; they posses a moral faculty, but are devoid of a Sense of the Deity. Man is as necessarily a religious, as he is a sociable & moral man. The minds of man & brutes differ in degree only, & not in kind (says Dr Hartley) & I am of his opinion.

The

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The horse & the turkey, have a peculiar sensation on seeing a red colour. They are immaterial & immortal as well as man.

On the Advantages, and Pleasures of the Senses.

Of the Sources of Pleasure. (The absence of pleasure causes pain.)

Pain is the natural state of man, but there is a great predominancy of pleasure over pain thro' out life. Every thing, except the mother's milk, is painful to a newly born Infant.

Of the Pleasures of the Sense of Touch.

The greatest pleasures which arise from the sense of Touch are, 1. In the propagation of the Species. 2. In kissing of them. & 3. In squeezing the hand of a young Lady; it is the first act of Courtship. This, Gentlemen, I suppose you can all testify to. The warm bath, riding, sailing, fox-chacing, being suddenly relieved from pain, are all sources of pleasure. The operations of certain medicines, as for example, Opium. Stramonium &c. Certain soft substances, as feathers, down, cattail &c. Certain titillations upon different parts, are likewise sources of pleasure.

The pleasures of the sense of touch to the fingers, are most agreeable on rubbing soft substances, and there is nothing superior to that of feeling the tenderness of a Child, eight or ten months old.

Pleasures of Taste. Many people place their principle

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principal enjoyments in the gratification of this pleasure. The pleasures of taste do not all accrue from nature; many thousands have their sources from art. The richest food soonest pails the appetite, & becomes nauseous. Aliments that have but little stimulus never pall the Appetite.

It is of a relative nature. It is varied by hunger and habit. It would fill a whole volume to enumerate the different pleasures of taste; & I believe there are many new pleasures which arise from it, that are yet to be discovered.

Pleasures of Smelling. Every region, territory, shore, or country are tributary to this sense. The rose has the most fragrant smell, next the pink, next the jonquil, tuberose &c. The pleasures of smelling are increased by mixture. I believe the sweet scented shrub of L. Car. ought to be ranked next to the rose in fragrancy. The flowers are most fragrant when the dew is upon them, hence they impart most pleasure, in the morning & in the evening. This sense is liable to be perverted.

Pleasures of Vision. It affords pleasure to the Eye in viewing, light, colours, figure &c. Height, distance, & magnitude afford a source of pleasure to the Eye. Different degrees of light afford different degrees of pleasure. Contrast is a source of pleasure. The great variety of colours, afford a great deal of pleasure to this sense. Man is the most beautiful creature in the world; next to him, is the Horse.

Pleasures

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Pleasures of Hearing. The human voice creates the most agreeable pleasure to the Ear, by conversation & music. Public speakers often charm by their melody.

Pleasures arising from all the Senses. They are not necessarily connected, the loss of one sense increases the pleasures of the others. They are influenced by the laws of Sensation, which I have enumerated.

We may be compared to a violin, our senses are the strings, every thing Sublime in us the bow, & the Supreme Being the hand that moves the bow.

The pleasures we derive from taste & smell are the soonest obliterated.

Proximate Cause of Pleasure.

Motion is spentially necessary to pleasure.
Pleasure consists in a certain definite & limited degree of impressions, & in a certain regular order of these impressions upon the nerves.

Causes of pain are distention; a certain degree of contraction in a part previously debilitated, and either chemical or mechanical stimuli applied to the body. In each of these cases there is an accumulation of excitement in the part which is pained. A high degree of distention produces pain, a small degree pleasure; for instance, Opium if taken in large quantities produces pain; if in small quantities it excites pleasure

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pleasure. Dr Haller says there is an afflux of blood to that part in which pleasure is excited: this is probably the case, in Generation: & some other pleasures; but in many there is an abstraction.

Women are said to have the most fortitude in bearing pains, perhaps they have, but I believe it is owing to their nerves arriving sooner to a paralytic state than those of men.

The same nerves are fashioned to receive the highest pleasure, & the greatest pain.

Final causes of the Senses.

They serve as the promoters of our existence. It is them which drives us to our beds in the evening. & drives us out again in the morning to the business of the day. They invite us to destroy the works of nature and of art. They should be avenues to convey us to the abodes of happiness.

Thus have I finished my remarks on the advantages, & pleasures which are derived from the Senses. But they cannot be enjoyed without health; they are untuned by diseases; they are so near related to pain, that they often turn into pain.

Pleasures of the Faculties.

I shall consider them.

1. When exercised upon by ourselves.

2. When

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2. When exercised upon others, and,
3. Their proximate causes.

Pleasures of the Memory, it arises from our retaining all the wonderful things of nature & of art in our minds. By means of this pleasure, we command the Ideas, which have set to rise again. Present as well as past objects occupy this sense. Imagination is a source of great delight; it sometimes transports us over the Ocean, thro' Cities & Countries, in quest of Learning. Creation is the business of this pleasure. Sometimes it delights us with stately buildings, erected by our own hands.

The Understanding; pleasure is derived from this in our investigation & discovery of the truth in all sciences. Truth so congenial to the human mind, cannot be discovered without pleasure.

The pleasures of Novelty belong chiefly to the understanding. This pleasure is felt by travellers in a high degree. Taste, this is sometimes so exquisite as to produce sympathy. Will, this consists in its mysterious connection with free agency & necessity. Passions, it would fill a whole volume to describe the pleasures arising from them. Ambition, avarice, hope, love, &c. all have their pleasures in different degrees. In reviewing these sources of pleasure we are not to consider them as acting seperately, but often

but often combined. Domestic affairs, are a source of pleasure to the mind; sometimes they produce a harvest of joy. as in the returning of a bloved Son. who had been for several years away from home. Marriage sometimes cure diseases. Married women are more healthy, and longer lived than Bachelors or Maids.

A Lady who was deranged. was cured by the — birth & suckling of a child; the child was at first taken away from her. fearing it would take the disease of its mother by sucking her; as soon as it was taken away. the mother became deranged when restored to her again she became sensible and continued so.

Pleasures of the Moral Faculty. What shall I say of this pleasure!! It would require a pen made of a quill plucked from an Angels wing to record its pleasure. They arise from its operations in acts of justice. benevolence, charity & piety. and its pleasures are at the highest in those acts. It may be perverted like the other senses. Some people take delight in seeing public Executions. Agriculture. a relish of this pleasure is as much born with as the pleasures of life are. The exercation of labour after a great & difficult enterprize is a great source of pleasure. Conversation causes many pleasures. The pleasures of the Senses & the Mind are so united as to be subservient to each other.

Association

Suppose the sleeping point to be 20 & the waking state 10 above or ten below 20, then when we wish to procure sleep, if the waking state is 10 above 20, we must abstract stimuli, or if 10 below, we must multiply stimuli until it is at the sleeping point.

Association of Ideas: this excites pleasure. viz. when we see a house, farm, & classical book our minds are often carried back to the pleasures of a country School.

Consciousness: this arises from our having a sense of our Existence & personal Identity. The latter may be conceived of, from the following; there never was a person who was willing to change his mind for that of another.

Pleasures derived from others. Exploits of Memory, a brilliant, & fertile imagination, a strong, acute & penetrating understanding, will, passions, &c. all give us pleasure when we see & hear of them in other people.

The proximate causes are: Undue distention & contraction. It is the diminution of the distention which causes contraction.

Pleasures of the body & mind which become so by habit, are more pleasing to the senses than those which were originally pleasant; for example, Men who are attached to Tobacco, prefer it to sugar or any thing else.

IX. Of Sleep and Dreams.

Proximate causes of Sleep: It arises from a certain degree of depression on the Brain made by an accumulation of blood on the Venous Sinuses & Medulla Spinalis. It has been called by Dr Brown the sleeping point.

The remote.

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The remote causes. in a relative nature. according as it is elevated above or below the sleeping point. which I have placed at about 20° wakefulness at 10° above or below the sleeping point.

It is produced by abstraction of stimuli by expending the excitability & by gradually elevating the system to the sleeping point. To produce sleep by abstraction. 1. By the abstraction of light sound and muscular motion.

2. Bloodletting. purges. gratification of the passions. parturition &c.

3. Certain substances applied to the body as. Solen down. feathers &c.

4. Cold, and certain sedative passions as. grief. fear. &c.

The second causes which produce sleep by expending the excitability are. Labour. the most intense heat, long & painful exercise of the understanding upon one subject.

The third causes which induce sleep by gradually elevating the system up to the sleeping point. are. Walking. riding small doses of Opium tea & coffee. certain Sounds. moderate warmth. pediluvium, &c. induce sleep by gradually elevating the system to the sleeping point. Sea when the system is about the sleeping point. drives it away. likewise Opium. But when 8° or 10° below. they elevate it to the sleeping point. The gentle stimulus of light elevates the system to the sleeping

I knew a Watch-maker who for the security of his watches always placed them in the room with him when he slept. by this means he became so accustomed to their ticking that when he was away from home he was obliged to procure all the watches in the house & place at his bed side in order to procure sleep.

When sleep comes on suddenly, we start owing to the sudden abstraction of excitement.

During Gen. Arnolds march to canada in the revolutionary war it was observed that the soldiers slept as they marched.

During sleep there is frequently a expiration of pain from stone in the bladder hunger & thirst. The pulse is slower & fuller the peristaltic motion of the bowels is diminished. This is obvious from a expiration of stools during sleep in cases of diarrhoea. Bile is secreted in greater quantity during sleep this is obvious from our being most apt to puke bile in the morning.

From 6 to 7 hours sleep is enough for any constitution. Wesley who lived upwards of 80 years slept only six hours.

ing point. You will often hear your patients say they did not close their eyelids till daylight. this is owing to the gradual breaking in of the light. stimulating the system to the sleeping point. I have frequently recommended a candle to be placed in the fireplace of my patients room & found it to have a very good effect in composing them to sleep. The stimulus should act in an equable manner upon the brain, nerves, muscles & bloodvessels in order to promote sleep. When the brain & nerves are below the sleeping point opiata should be given; exercise when heat is in the muscles; if the bloodvessels, wine should be given; if all are below the sleeping point opium should be given. A recumbent posture also invites sleep it is favourable to the accumulation of the blood in the venous sinuses & spinal marrow.

Opium. Ardent Spirits & a full meal produce morbid sleep. The sleeping in crowded assemblies arises from the pressure made upon the brain by the Azotic Gas.

State of the System in Sleep.

The first signs of Sleep are a twitching in the Eyes. hence the reason why children when sleepy rub their Eyes; pains & weakness in the legs. which often make Children cry out.

In Sleep

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In sleep, the eyes first become insensible, next taste, next smell, hearing, & last of all touch; this I infer from our changing our posture in bed.

But it is of different order in different people; some people when asleep, can hear distinctly, some if sound asleep will awake, from the smell of the of a candle in the room. The muscles of the legs & arms are first relaxed when sleeping in a recumbent posture, next the muscles of the head, & last of all the muscles of the back. In a sitting posture the muscles of the back are constantly in action. We sometimes fall asleep suddenly; when we do so, we are very apt to start. The phenomena attending sleep are loss of motion, suspension of sensation, diminution of irritability, of hunger, thirst, involuntary motions are slower, the pulse is slower and fuller, & the peristatic motions of the bowels are slower. Secretions are increased, especially the bile & urine. It is from this cause that the vomiting of bile generally takes place, in the morning, & at no other time in persons of a bilious habit. Excretions are lessened, & there is a diminution of the heat of the body. Cold 12° above 0° induces death in sleep; in waking state the system will bear a great deal more. The heat is sometimes greater from its being confined by the bed cloaths, & owing to a slight degree of disease in the system: We are much weaker in sleep than when awake, since the

the reason why we are attached by many diseases in the night. Abortive children require more sleep than children born at the end of nine months. Children require more sleep, than adults. Carnivorous animals more than perbivorous.

From six to eight hours sleep in the twenty four are sufficient for almost all constitutions. Sleping & waking at the same hour proceeds from habit, or what I shall call an apociation of motion. The stimulus of the morning light, the stimulus of the urine, habit &c. are the causes which induce waking from sleep. In waking from sleep the mind first unfolds itself, next the ears, we next rub our eyes, next stretch our legs, gape, sneeze &c. in order to produce excitability alike in all parts of the system.

State of the Body after Sleep.

Consumptive people cough most in the morning. People should never proceed to any kind of business in the morning until they have taken food of some kind. From the debility arising from sleep we are much more liable to fear after sleep, hence the reason why the Indians make their attack in the morning only. I never heard nor knew of their making an attack at any time but in the morning. Never suffer an invalid to walk, ride, or use much exercise before breakfast. The understanding acts most promptly in the morning.

Cause

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Cause of Dreams.

Do dreams always follow sleep? I answer no: they are not necessarily connected with it. I believe with Mr Lock that the soul sleeps — when we do not dream. Some people live all their lives without dreaming. However often we dream, we never dream of any thing, the raw materials of which have not been our senses. "Nihil est intellecte, quod non prius fuit in sensu" is an old saying, and a very true one. Nine out often of our dreams are of a distressing nature. We sometimes dream, and cannot recollect it afterwards.

The causes of dreams are a troubled phenomena of the mind, imperfect sleep, an uneasy position in bed, too many bed cloathes, strong tea, light &c. these are the principal causes. When the nerves & muscles repose in sound sleep, the blood vessels & brain are moved. Dreams resemble the ideas of a person in a delirium arising from fever. They are generally of a more distressing nature when the system is below the sleeping point. Images are more vivid in sleep. This is occasioned by an abstraction of all the external senses, & the suspension of excitement in the brain. Hunger frequently causes persons to dream of hungen.

A Clergyman.

A Clergyman happening to fall asleep at a certain house, a mischievous boy thrust a pin into his back which made him cry out "Oh! I know now what St. Paul meant by a thorn in the flesh." The above anecdote proves that the understanding is much more excited when asleep, than when awake. The memory, understanding, will, sexual appetite are much more excited in sleep than when awake. Dreams are most common in the decline of life; they are also most frequent in disease, because sleep is imperfect. The morning light is the most frequent stimulus of dreams, hence the reason why we so often dream in the morning. Brutes frequently dream. Persons who walk in their sleep are called Somnambulists, those who talk Somniloquists. It remarkable that persons who talk in their sleep, seldom if ever recollect their dreams. Somnambulists, never recollect where they go, or what they do. Sound sleep is the perfect annihilation of all the senses.

Use of Sleep.

It favours the assimilation of our aliments. It restores the body to a certain degree of equilibrium.

brium; the greatest proportion of excitement is in the blood vessels. it also equalizes the excitement. by removeing slight diseases. it gives to the mind repose & refreshment. & it restores the system to its natural order. Without sleep. madness would be universal. Sleep arranges the moral faculties. Take away hope & sleep. & man is the most miserable creature in the world.

Use of Dreams.

There uses are to support animal life during the hours of sleep. & to dispate a due proportion of excitability which is accumulated. They approach to the nature of many diseases. Dreams partake of the nature of the stimulus which induces them.

We proceed in the next place to consider in what manner the sensations are recruited, which is by means of Aliments and Drinks. & these are necessary for our daily subsistence. which is to promote the exercise of our minds. to promote social intercourse between nations & people. & to keep in our minds a knowledge of our necessary dependance upon the Supreme Being.

Causes of

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Causes of Hunger.

Its causes are: according to Dr Boerhaave. 1. The action of the internal coat of the Stomach. 2. The remains of the last meal, & the gastric juice stimulating the stomach. The natural appetite seems to depend upon a certain relaxation of the Stomach, sinking it to the hunger point. Appetite depends upon the stimulus of the gastric juice, this I infer 1. From its presence in the Stomach. 2. From its absence producing loss of appetite. 3. From its morbid effects being produced by too great a quantity of it. Sudden grief, fear, shame &c. destroy the sense of hunger by debility. Opium, by its exciting the system above the hungry point. The effects of certain substances as sweet oil, takes away the Appetite.

Causes of Thirst.

Thirst is seated in the fauces & throat, its causes are 1. A certain relaxation of the fauces. I infer this from certain substances depressing or relaxing it to the thirsty point. For instance of things observed when going to engage in Battle generally call for drink. 2. From acrimony stimulating the fauces & throat. It acts both partial & general; salt meat acts in the former way, the latter is induced from fever.

Fear.

Fear, pain, opium &c. reduce & elevate according to their quantity or severity, either above or below the thirsty point.

Of the Teeth.

We shed them in Childhood because they do not grow with the Jaw. There is no reintegration of any part of the teeth. The upper Jaw teeth have three prongs. Carnivorous animals cut & press their food only. Herbivorous animals cut & grind their food. Man does both. They are situated in a spongy part of the Jaw. & are of a conical figure by which we are able to bear more pressure.

Of the Stomach.

It is possessed by all animals except the lacinia hydatida. It is the most important viscus; it has two kinds of nerves; one pair, which is derived from the intercostal, for secretion; the other pair derived from the par vagum & eight pair, which imparts to it a sense of specific sensation. Next to the brain, the stomach has the greatest sympathy to all parts of the body. It is the index of the state of the mind & nervous system. If a mania determins to do a thing, if he should happen to belch before he does it, he will desist from doing it.

Of Digestion

It is carried on mechanically & chemically.

Mechan-

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Mechanical includes trituration: Chemical includes putrefaction heat & solution. Dr Pitcairn says that the trituration of the Stomach equals twelve thousand nine hundred & fifty one pounds. Dr Boerhaave says that it equals the force of all the muscles of the body. The experiments of Spallanzane prove that trituration has but little effect in producing digestion; he swallowed Cherries. currants &c. whole. which after a certain time he discharged whole. I reject also putrefaction; heat & solution is all that is necessary. Its greatest dissolving power is when the heat is at 112°.

The Saliva & gastric juice are necessary in digestion. by dissolving the food Twelve ounces of saliva are secreted in twenty four hours. The gastric juice is the most active of the two liquors. It acts more or less in all animals; in the human species. the dissolving power is very great. It acts most powerfully upon meat that is well masticated.

The presence of the nervous system is absolutely necessary to Digestion: This was proved by cutting the eight pair of nerves of a Wolf. as soon as they were cut digestion ceased. From this view of digestion it appears to be an animal process. The influence of the whole system is also necessary in Digestion.

The phenomena

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The phenomena attending a full Meal.

A slight fever often follows, but is not necessarily connected. It is not often taken notice of. It is occasioned by the stimulus of the food overcoming the excitability of the system. A disposition to sleep attends it by its producing a depression in the brain. This never succeeds a moderate meal.

The mental faculties are effected after a full meal; there is also a disposition to rest, this is favourable for digestion. Dr Harwood tries the experiment by giving two pointers a certain quantity of food; one was kept running for two hours, the other kept still; on killing them the one that was kept still, the food was almost all digested; in the other no digestion had taken place. The state of the air influences digestion. Food generally lies from one to seven hours before it is digested; its medium is from three to five hours. The passions influence digestion, it is invigorated by cheerfulness. It retarded by, grief, despair &c. The aliment after digestion is called chyme: the chyle is also formed by the aid of another viscus called the Liver, it furnishes a fluid to mix with the chyme called chyle. The chyle is not acid as some suppose.

Of the Liver.

The common opinion of the liver is that it furnishes a matter to mix with the chyme. It to form

forme it into chyle. It is also supposed to be an excrementitious matter. I believe it to be intended to absorb the fat & to produce blood, where no aliment has been taken.

The design of the Liver is to receive the blood from the different parts of the body & to convert the omentum into chyle. Viz is the principal viscera in preparing the chyle; this I infer from the following remarks, viz: that it is present in all animals; that the cystic & hepatic bile are entirely different from each other; that it is larger in children than in adults; that in adults twenty four ounces of bile, is secreted from it in twenty four hours; also from the chyle being found in the blood after it has passed thro' the lungs; from the quantity of blood in the veins, from which the hepatic bile is secreted; (It is less subject to putrefaction than arterial blood taken from any other part of the body.) and that the blood contains a preternatural quantity of bile. The hepatic bile is sweet in adults & in a new born Infant. The cystic is bitter. Intemperance increases the size & labour of this viscera: It produces a preternatural secretion of bile.

Use of the Gall-bladder.

The use of the Gall-bladder is to serve an analogous purpose to the Liver. It serves as a reservoir for the redundant bile to be thrown, in order to prevent regurgitation of it in the duodenum.

The bile

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The bile is supposed to undergo a putrefactive fermentation: this is owing to its stagnating there. It also stimulates the bowels to discharge their faces. Bile is less putrescent than the blood.
The duodenum is the receptacle of the Cymphatic faces if I may use the expression. Pressure of the Stomach on the Liver suspends the Bile: in this I differ from both ancient & modern authors. I infer this to be the case because suppression stops the discharge in every part of the body. The Gall-bladder is filled only when the Liver discharges. The fator attending the faces is derived from the hepatic discharges.
The swelling of the belly in young children which is attributed to worms, wind &c. is owing to the redundant quantity of bile in the Liver. In animals that have no Gall-bladder (Dr Haller says) the bile is always sweet.
I infer that a second chylopoietic process takes place in the Liver from the effects which intemperance has upon it. I also infer it from the disease of hepatitis: in some instances we find the blood drawn to have a buffy coat.
Diabetes arises from a defect of secretion of the bile. The fat lost by persons in disease is by its being carried to the Liver, absorbed by it, & turned into blood, hence the use of copious blood letting & purging in fevers. The aliment may be absor-
bed

bed without the stomach by means of the Liver.
The Liver is a gland of supply. & the liquor which it supplies. is the chyle which nourishes a great part of the system. The Gall-bladder is to the Liver. what the rectum is to the Intestines. In cases of sickness. or diseases of the Stomach. the Liver carries on digestion; & when the Liver diseased. the Stomach acts with double force

The omentum is designed to supply the body with nourishment. by its fat being turned into blood & chyle, by means of the Liver.

Use of the Spleen.

It has four uses ascribed to it.
1. The preparing the blood for the secretion of bile. from it by the Liver.
2. Dr Hewson supposes it to be the organ in which the red globules are formed.
3. Mr Holme supposes it to serve as a reservoir to convey off the fluids from the body.
4.

Other viscera are our friends in health but the spleen is our friend in sickness.
Mr Holme says that there is a direct communication between the stomach & the spleen, from experiments which he made, viz. by tying up the

the hylorus of a dog. the liquor was conveyed from the stomach to the spleen.

The use which I ascribe to the spleen, is that it serves as a reservoir for the Blood; This I infer 1. From the structure of the Spleen; it has but one large artery, larger than that of the Liver; it has no excretory duct. It has veins which ramify thro' the whole of it. It is — eighty times larger than the artery which runs thro' it; it is situated in the left side. In laughing it opens the wastegates for the blood to escape through; if sudden death happens, it arises from the rupture of the Spleen.

The pain which a person feels after running, riding on horse back &c. is seated in the Spleen. I ascribe this to the force with which it is thrown into the spleen, or from the feeble action of its vessels. The blood from the spleen is less coagulable, than the common blood, which is taken from the arm. In diseases the spleen is generally affected. An enlargement & obstruction of the Spleen generally follows chronic fevers (says Morgagni.) Hemorrhage arises from a large & obstructed spleen. In wounds of the spleen, there is but little pain. In consumptions the spleen is frequently enlarged, from two to five times its natural size. It is one of the most useful organs in the human body. The

The liver has a reservoir for the redundant bile, viz. the Gall-bladder; the blood for its oil, the cellular membrane; the Lymph. its absorbents; & why not the blood vessels have a reservoir, the spleen for its redundant blood.

From the use we have assigned to this viscus, we see the necessity of bloodletting in disease.

Of the Thyroid Gland.

It serves to defend the brain from all the morbid causes which determine the blood to it. It is situated in the anterior part of the larynx, & it is larger in Women than in Men. This is necessary in order to guard them from the diseases, to which they are liable to, more than Men. The Globus Hystericus is seated in this gland. Certain exercises of the body & mind have an effect on this gland. In those who are affected with it, there is pain & enlargement of the Gland.

The Thymus Gland. It has two auricles; this gland acts as a reservoir, & as a waste gate. It has no secretory vessels, but like the Spleen, is of a spongy texture. It is wisely placed near the lungs in children, because they are most likely to be overcome, if there was not a waste gate. A Child never spits till after it is three years of age; it therefore requires more copious bloodletting in a Catarrh than an

than an adult, because it cannot spit out the phlegm.

Of the the fluid formed from the chyle called Blood. 1 crassamentum, or cruor. 1 coagulated lymph or serum. It possess a power of coagulating itself.

The properties of coagulated lymph.

It is common to all animals; it is sweet and pale in Infants; in adults of a red colour; in old age, pale; it coagulates in health, & in certain diseases, when exposed to the air. It coagulates in the body, when it stagnates, as in Polypi. In venesection, the smaller the stream the sooner it coagulates. The most buff is formed, when it coagulates slowest, as in inflammatory fevers. It also coagulates soon when it runs into a narrow moistned vessel, & in a wooden vessel.

The action of the vessels must be increased in order to produce sizy. Pregnat women always have sizy blood, owing to an increased action of the vessels; it is also sizy in the spring.

Dissolved blood, has been ascribed to putrefaction. When poured into a vessel it is of the consistence of tar or molasses, & never seperates.

Dissolved blood arises from the violent action of the blood vessels rending & tearing it to pieces; this I infer from the violence of the diseases in which it takes place; from its being so often taken from

from the arteries; when there is more action than there is in the veins; from an experiment of a Dr Lockett, who in a hot bath of 211° became delirious; he was taken out & bled, & the blood was as much dissolved as it ever was in the most violent diseases; & lastly, from it's being dissolved by the bite of a viper & inducing death. Take a small quantity of blood from a diseased person & set it by to coagulate, in half an hour, take a small quantity, again, & set that by also, & you will find it will coagulate much sooner than the other, on account of the arterial action being diminished by the first bleeding. Or if you give a patient nitre, sal. soda &c. it diminishes the action of the blood-vessels, hence the necessity of giving nitre in inflammatory fevers. The bloodvessels & blood stimulate each other, and they both die by the excess or abstraction of each others stimuli. The fibrils of the coagulated lymph, possesses vitality. All the different appearances of the blood arise from the different actions of the bloodvessels. The buff coat of the blood drawn from pregnant women is known as I hope to prove hereafter to its being an inflammatory disease. We are conceived in disease, formed in disease, & born in disease.

The coagulation of the blood is retarded or quickened according to the action of the Muscles being re-

Hardened

tarded or quickned. The buff of a diseased person
& that of a healthy person, being taken at the same
time, exposed to the same degree of heat, & in the
same position: the former will putrefy first, owing to the increased action of the vessels.
The fibrils of the blood in their original state, are only animalized, but they become animated by disease.

Serum. It is water combined with several saline particles. It is of a greenish colour. Its use is to carry off ~~waste~~ the saline matter from the blood, also to furnish fluids, necessary for the different parts of the body. A stagnation of the serum is the cause of dropsy.

Globules of the Blood; they are less in an Ox than in man, they are less than the 360th part of an inch in diameter when dry; they are very inflammable; they are of a more florid colour in the arteries than in the veins; they receive their red colour from the oxygen which is taken into the lungs; the blood when decomposed contains albumen, Sal. Soda, & iron. In an adult the blood contains nearly ℥ii. of iron. The red globules are not most essential to life, it may exist without them.
Good health is generally connected with them.
Redness of the lips, & cheeks, also a redness of the whole

face are general signs of good health. The red globules getting into the serous vessels causes inflammation. The blood resists putrid substances. In an ordinary sized man there are 25 ℔ of blood, with the chyle 30 ℔.

Use. — The life of man is in his blood, without blood there is no life; all the different secretions arise from it.

Of the Lymphatics & Absorbents.

They are a system of small vessels, arising from all parts of the body, which empty their contents into the thoracic duct.

Mercury applied to one side, will affect that side only. I do not say by what means, whether, by absorption, or, sympathy, but there appears to be a sympathy between the parts. Their coats are stronger than those of the arteries; they have valves in them; they have nerves, arteries & veins; they possess mouths not only for absorption, but for feeding upon the blood, fat &c. they have also a retrograde power.

Of the Lymph.

It is a secreted fluid; it is less coagulable in dropsical, than in healthy persons. The lymph is conveyed to the thoracic duct by means of the pressure of the adjoining arteries. By the prepare of the blood & lymph. There are lymphatics in all

parts

parts of the body, except the head. The veins is no part convey or absorb the lymph. The lymphatics have a power of absorbing solid as well as fluids parts. The arteries & lymphatics are very different. the business of the arteries is to repair; that of the lymphatics to destroy. The lymphatics are said to absorb moisture externally. from the number of lymphatics which open on the surface of the skin. viz. from the body being heavier in wet weather. This is not the case experiments have proved that Spt. Turpentine is not absobed externally, but by the lungs. Lymphatics have never been discovered opening upon the surface of the skin; they are found opening under the skin. Air cannot itself enter externally. The warm bath acts only by its gentle stimulus. The cause of persons being heavier after bathing is owing to the suppression of the perspiration, or by the vapours which are absorbed by the lungs. Poisons will not enter unless the skin is broken. Dan. Lus matter will not take effect unless the skin is wounded. I have bound it on the arm & let it remain three or four days & nights without its producing any effect. I have known of its being taken in a dose of medicine & the patient died, without any effect. Mercury acts by sympathy only & not by absorption. by putting it under the armpits, it

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is exhaled into the mouth quicker & it produces salivation sooner than when put on any part of the Body. In discussing tumours mercury only takes effect by strictions. Camphor acts by the nerves. Some say that the Yellow Fever is taken in some by absorption, it is not so, it is thro' the nerves only. There is no such thing as external absorption. The lymphatics are excited into action by distension, pressure, friction, vomiting, purging, electricity, mercury, heat &c. The use of the lymphatics are to promote the growth of the body: to act as scavengers to it, viz: to clear & absorb all the filth away from it, & to add a due degree of fluidity to the blood. The matters when absorbed, are carried to the liver to undergo their change. They were first discovered in the year 1652.

Secretion.

Refer you to Anatomy for the names of the Glands &c.

Fat is an excretion & secretion. Uses of the Glands containing secretion are many. They may be compared to the closets of a well finished house. The secreted liquours are, — lymph, Saliva, bile, pancreatic juice, gastric juice &c. They are different in their substance, watery, mucous, oily & coagulable.

The lymph is coagulable, but less so than the blood. Saliva, eighty parts out of an hundred

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of it are water; it is much changed by disease; twelve ounces are secreted in twenty four hours; it aposits digestion.

Gastric Juice; it is the strongest in young & in old people; it possesses very powerful properties in solving the blood taken into the stomach. Old people will digest what persons of middle life cannot, from their Gastric Juice being much stronger.

Pancreatic Juice, is of the same nature with the saliva. The urine contains seven different kinds of substances.

Synovial Juice, this is secreted thro' the night, & is interposed between the bones; this is the reason why persons are tallest in the morning. During the day the body is in motion, & the synovia is destroyed, the joints of course approach nearer to each other, & thus diminish the size.

Milk is a secretion from the fresh chyle, this I infer from its being so soon formed. It is composed of oil, mucilage & whey. It is affected by the passions of the mind.

Fat; it is contained in cells or cavities, which have no communication with each other; these cells are absorbed with the fat. It is the source of disease both local & general. It abounds most in large muscles, in the breast, face &c.

face &c. Its use is to facilitate motion; to fill up apertures in the cavities of muscles; to increase the heat of the body, & to supply nourishment to the body, when there is a loss of appetite in sickness; the omentum I believe to be the principle source of this. Man loses and acquires fat slower than any other animal.

Fat men and animals have less blood in them than those that are lean; this is owing to the fat pressing upon the blood vessels. For this reason a fat man should not be bled as much as a lean one. An undue proportion constitutes not a disease, but what I call a disorder. The most important functions of the body are carried on by means of secretion.

Excretion.

They are the faces, bile, & perspiration, to which some add sweat, but this is a preternatural excretion of the perspiration.

The faces are precipitated from the chyme into the duodenum & carried down by their weight, or by their acrimony stimulating the Sphincter ani.

Cystic bile; the peristaltic motion of the Intestines is performed by means of the bile. The bile is generally of a yellow colour. It is composed of some albumen, which gives its viscidity. It is the cystic bile forming a black colour, by stagnation, produces what is called

is called the black jaundice.

The passions have an effect upon the bile, especially anger. A young Gentleman being insulted in a house where he could not decently resent it, after being enraged some time, he went out of the house & vomited nearly a quart of bile.

Perspiration. this is discharged only from the extremities of the arteries by excretion; it consists chiefly of water and a little salt. In some people, especially persons accustomed to hard labour, it emits a fœtid odour. It is different in different degrees, seasons, ages, & people; certain aliments add an odour to it.

Sweat arises from the same vessels with the perspirable matter. It is greater after divided meals, than after two or three full meals in a day. It is less copious in women than in men, hence the necessity of the catamenia in women. Motion & rest, have different effects upon it. Certain aliments diminish violent passions, gratifications of the venereal appetite, all increase the quantity of perspirable matter. Perspiration from the lungs is about ℥ij in twenty four hours. Obstructed perspiration is thrown on the lungs in winter & causes catarrh; in the Summer it is thrown on the intestines, & causes dysentary & diarrhœa. there is a considerable harmony between this exer

*Their liver is said to be larger; their arteries are possessed of less strength, but more irritability.

excretion, & the bowels & kidneys. When this is suppressed it is carried off by the faces & urine. Sweat is sometimes bloody, this arises from the great agony of body & mind under which the person labours.

Of Nutrition.

There are two opinions with respect to the manner in which nutrition is carried on. 1. That it is by means of nerves. & 2. That it is by means of the arteries.

I believe it is carried on by means of the arteries, & that the nerves are indispensably necessary to assist the arteries, but in what manner I know not.

Of the Peculiarities of the Sexes.

I. Of the Female.

Women in all climates & in all ages are less, but require their growth sooner than men.

Their bones are less solid, the cuticle is softer & smoother on them, & there is very seldom any hair to be seen upon it. The true skin is softer, & the cellular substance is more open.* Their feet & hands (ceteris paribus) are less. also the head is less than men's. their nerves are more sensible, & more perceptible of impressions; they perspire less. & their brain is more liable to affections; their pelvis is wider. & their trochanters much wider apart than men's; hence they are able to contain much longer than men. After a certain number of—

bers of years a discharge of blood takes place every month, called catamenia. They have large glands on each side of the thorax, to secrete milk to nourish their offspring; their thorax is moved much more in respiration, their voice is soft & shrill, & they are longer lived than men that is, more women live to be old, than men.

Difference in the Minds.

The difference between the minds of males & females have been ascribed to education, but I cannot hold to this; I believe there is a natural difference.

In women the mind if less vigorous & comprehensive, the same may also be said of the imagination. They excell in their recollection of past events & words; their faculties of taste are much more acute; their moral faculties are more acute & sensible, & they have a more exquisite sense of the Deity; hence more women become religious than men. They are inferior to men in their retention of Ideas.

They have more kindness & humanity than men. Conscience is less sensible in them. they are more inclined to despair. At an Earthquake in Calabria in Sicily, in which 15000 people were buried in it on digging them out, the women were found with their arms folded up, & the men with their arms stretched out as if they had

has resista to the last. Mothers dispair sooner of their children recovery of their children in sickness than the father. The women have quicker perceptions, but less judgment; they have more fortitude but less courage: they have more delicacy & modesty than men, & I believe this to be owing to nature, & not to education as some suppose. In immergencies we may safely rely upon the judgement of our wives than ourselves They are less disposed to give injuries than men. owing to the weakness of their minds: they some times display more courage than men. All these peculeraities arise from nature.

Of Menstruation.

Females of every species are subject to this, excepting the female monkey. It is different in different climates habits & constitutions. In warm climates it begins about the twelfth year, in the cold about the seventeenth: the medium is about the fifteenth. It begins the soonest in those accustomed to high life. I knew three children of seven years old, who menstruates, but it did not return monthly until the age of puberty. At the time of puberty the breasts swell the eyes are brilliant, & the venereal appetite becomes sensible. The menstruation continues generally till the forty fifth & fiftieth year, & then ceases: some menstruate till eighty. Women who drink hard of

Spirituous

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* There are accounts of its returning after having ceased for many years. It ceases sooner in women that labour in the open air.

spirituous liquors, menstruate to old age.* From xiij. to xx. is generally menstruated at a time, it commonly lasts from two to four days. Their is no peculiar smell or quality attached to it. It occurs once every lunar month. In general it ceases during pregnancy & giveing suck. Some menstruate during pregnancy, when this happens it comes from the vagina, & no inconvenience arises from it. Some menstruate during the time of suckling. It generally returns about the eleventh month after delivery. Diseases are more violent in them during menstruation, & the pulse is generally more active. It is a disease; women often call it their monthly disease. The state of the uterus & vagina prove this; morbid excitement takes place in the uterus, & sometimes to such a degree, as to prevent the flow of the menstruated blood. They do not cease to flow in Mania, & Consumption, but they do in many fevers.

Causes of Menstruation.

I shall enquire,

1. What is its origin.
2. Why it is periodical, &
3. What purpose it is intended to serve.

1. Its origin. Dr Brown supposes its origin to be from the stimulus of the venereal appetite. Another opinion is, that it arises from a fermentation taking place in the uterus. It arises from

from plethora; this is owing to their sedative habits, the laxity of their arteries & their perspiration. Previously to the discharge the plethora is translated to the uterus; general plethora first takes place afterwards local plethora. So more happens here than in Hamoptysis of the lungs, the plethora is first general then local. It may be considered as an Hamoptysis of the Womb. The hemorrhage comes from the arteries & not from the veins as some suppose.

2. Why if it periodical?

The moon cannot influence it. if so it would happen at the same time in all persons, — which is not the case. It must be applied to the association of motion & ideas.

3. What purpose is it intended to serve?

It is to increase the desire for the venereal appetite, & to excite a desire for conception. They are more liable to conception immediately before or after menstruation; at this time the uterus is a little dilated, which makes it more favourable for conception. Those who give such seldom become pregnant till after two or three menstruations! The venereal appetite is first felt at the first time of menstruation. There is no such thing as Hermaphrodites in red blooded animals. Snails only are Hermaphrodites

The peculiarities

The peculiarities.

III. Of the Male.

1. Of the Organs of Generation. &
2. Of the Changes which take place at puberty.

1. For an account of the Organs of Generation I refer you to Anatomy.

2. Of the Changes. At puberty there is an enlargement of the bones of the nose & forehead, the thorax is widened, the beard appears, & the voice becomes hoarse. This generally happens about the fifteenth year. Eruptions upon the skin & neck. & the venereal desires arise at this time. There are instances of its arising much earlier. It has been said to arise from the absorption of semen, but this I do not believe. It arises from the stimuli of the semen upon the seminal vessels. Castrato animals are larger than those which are not; it arises from the debility which castration occasions, relaxing the vessels, & of course allowing more blood to be contained in them. The shrill voice & the loss of beard in Eunuchs, arises from debility. There is no absorption of the semen after it is secreted, it is kept up by the increased tone of the system.

Of Generation.

Man cannot exist as a man without the venereal appetite; there is no condition of life, let it be ever so mean & contemptible but

what

what the venereal appetite is felt: old age does not always extinguish it: it is felt at all seasons of year & at all times; the gratification of it causes debility.

Causes of Generation.

Clouds & darkness hang over this secrecy of nature.

The semen is full of animaculi; it acts by imparting motion to the female ovum which constitues animal life. Three grains of the semen of a Toad fecundated a pint of water. so that one drop of it impregnated a female toad. How is the male semen brought into contact with the female ovum? The common opinion is that the ovum is seized by the fimbriæ of the Fallopian Tubes, & is carried into the uterus & there comes in contact with the male semen. Dr Hayden's opinion is that it is the effect of sympathy of a specific nature. The latter theory is refuted by the experiments of Spallanzani. They prove that impregnation does not take place, unless the male semen. comes in contact with the ovum.

Dr Harvey is of the opinion that it is absorbed by the lymphatics & carried to the blood, from thence to the Ovaria. Mr J. Hunter thinks it is brought into contact by means of the peristaltic motion of the vessels to the ovaria. I am of Dr Harvey's opinion. Some

women

women who are barren, by going to another climate become fruitful; of this I have heard of several instances. After long absence from their husbands they sometimes prove fruitful. Nausea, vomiting, pain, yellow and black spots &c. are symptoms which arise at the time of conception.

If pregnancy occurs whilst giving suck, the child will refuse to suck, & it becomes emaciated. A disposition to eat certain aliments, sometimes gives the first notice of conception; this nausea, vomiting &c. generally ceases about the third month after pregnancy, but others come on, viz. a tension of the abdomen, a great discharge of urine, & sometimes swelled legs; a swelling of the uterus, this is cured after delivery by the discharge of the lochia.

For an account of the nourishment of the fœtus, I refer you to Anatomy.

The ordinary period of gestation is nine months, but books mention some cases of thirteen, & some of only five months. The hymen being wanting is supposed to be a sign of prostitution, but is not always the case. The hymen is sometimes naturally destroyed, from falls, & from diseases. The becoming destroys it. At the close of natural

gestation

gestation, the child changes its situation, & by its efforts produces pain. Sickly & lean women are delivered with much less pain than healthy & fat women. I do not believe that there is a necessary connection between pain & childbearing. We are told of women in many parts, that bring forth children without pain, and especially those in warm climates.

Bloodletting alleviates the pains of parturition. It acts by reducing debility, from abstraction, epilepsy, opium, & drunkness have the same effect, by producing insensibility.

Of the Means of preserving Health.

Health is that state of the system in which its excitement & excitability are in an equal & exact ratio. By knowing the genial order of health, you then know how to restore it when it is lost! One half of the persons that are born die under the age of puberty; & according to some calculations, before the eight year.

General remarks upon the nature of aliments & drinks. & the time of taking them.

Aliments & drinks from their quantity or quality are often the causes of many diseases. Man was created a civilized being, but by the gradual loss of religion became a Savage.

The aliments which man eat, when created was pointed

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was pointed out to him by revelation. Man is a creature of habit with respect to food, as — much as with respect to climate; hence he is called an Omnivorous animal. That — man was designed to eat a mixture of animal & vegitable food. I infer from the instinctive relish he has for it; from the structure of his teeth, alimentary canal &c. from the great health & strength of him.; from the diet of one of them alone producing very bad effects; from the longevity of nations; & from the command of his Maker. If he were to eat nothing but vegetables, it would require so much to nourish him, that his stomach — would be overloaded, & he would not be able to walk, nor do any business for some time after eating, whereas four or five pounds of animal food is sufficient for men who — work hard all day.

Aliments support the body by their stimulus. This stimulus acts by their weight, by distention, by their active or pungent taste, by the prompt or gradual manner in which they are digested, & by its imparting nourishment slowly to the body, also by the facility or difficulty with which it imparts pleasure to the organs of taste. Aliments contain sugar, oil, starch, gum, mucilage &c. They

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They are also said to contain calcareous earth.
Bread is most wholesome when taken cold.
Rye bread is very nourishing & frequently acts
as a gentle purgative. Rice has a very pleas-
ant taste, & is very nourishing. Oatmeal in
the form of gruel, is very good for sick persons,
it has but little nourishment. Equal parts
of flour, & boiled potatoes mixed together. An
apple inclosed makes very excellent dumplins
for convalescents. Potatoes sliced & eaten raw
with vinegar, is an excellent preventative
against the scurvy. Turnips are less nour-
ishing than potatoes, they are deprived of
their bitter taste, by letting them stand in
water for some time after being peeled.
Onions are a good diet for labourers; they lie
on the stomach without digestion for some
time, & impart a great deal of stimulus to
the system. Onions boiled in milk & water makes
an excellent broth for convalescents. Peas and
beans are very nourishing when well boiled.
Peas make very good soup when boiled in
milk & water. Asparagus is very nourish
ing, the smell which it imparts to the urine
may be prevented, by taking two or three
pills of the tears of turpentine &c. turpentine
from pine boards; after eating it. Cabbage
is very wholesome; that which grows upon
poor ground is the best. It is however apt to
effect

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affect the stomach. Cucumbers acquire salt
pepper, & vinegar to please the appetite & promote
digestion. Fruits when perfectly ripe & taken
in moderate quantities, are very good & nourish-
ing; instead of producing disease they pre-
ly prevent them. Nuts contain so much oil,
that when taken in large quantities, are very
injurious. Salads contain but little nour-
ishment, they require salt, pepper & vinegar
to stimulate the stomach, & aid digestion.
Fresh fish is much easier of digestion than
salt fish. Fish is an intermediate degree
between vegetable & animal food; therefore
if your patient has been confined to a vegeta-
ble diet, you should prescribe fish before ani-
mal food. The female animals are more
stimulating & more easy of digestion than
the male. Adult animals more stimula
ting than young. There is no difference be-
tween old & young fish. Wild animas are
more easy of digestion than domestic; the loin
of a beef more easy digested than any other
part. The legs of wild birds are more easily
digested than the wings. Pastured cattle are
easier digested than stall fed. The drier the
season the better the Mutton is. All animals
are more or less unwholesome in the Spring,
because at this time they propagate their
species. A fowl is rendered much more di-
gestible

gestible when chased for some time before it is killed. A fish will keep as long again to kill it as soon as it is taken out of the water, as to let it die of itself; for all those animals which bleed to death, keep much longer, & are more easy of digestion, than those which kill themselves. Fat is more nourishing & much longer in digestion than lean meat. Labourers require something that will not digest very easy in the morning, & which they can feel all day in their stomachs, before they go to work, such as sausages, pork, onions &c. To keep meat from being tainted it should be kept in an Ice house, in a cool cellar: by excluding the air, by covering it over with charcoal, or by sprinkling it with salt &c. Meat a little tainted may be cured by putting it in lime water. Meat that is well done imparts much more nourishment to man, than that which is half done & it is much easier digested. Broths should be made the first dish in every temperate family. An excellent broth is made by putting one pound of beef, deprived of its fat, into a bottle well corked with a piece of linen tied over the cork; it is then to be placed into a pot of cold water, which must be made to boil from three to five hours. it is then to be decanted

be decanted off. & taken with some toasted bread.
In boiling meat to make broth, just before
the pot is taken off, it should be made to boil
briskly. the fat will then rise up to the top of
the water, it should be skimmed off & the pot
taken off. of the fire. & you will have excellent
broth. Boiled meat, chicken &c. is better
for convalescents, than that which is roasted.
it has not so much nourishment & is not
so stimulating. Baked meats should not, by
any means be given to convalescents. Salt meat
is the most substantial food for ~~convalescing~~ people, it
keeps up the action of the system & prevents Dys-
pepsia. In Canada & the northern Countries
they keep their meet, by freezing it, & when they thaw
it for use, they do it by immersing it in cold water
several times.

Milk contains but little stimulus, but a great-
deal of nourishment, it is most agreeable & most
salutary in warm weather, when sour & turned
into what is called bonny clabber. Cheese contains
much more nourishment than butter.

Eggs constitute the principle part of the diet of ma-
ny people in some countries! They are of a com-
pound of both Animal & vegetable; the white is
the vegetable, & the yolk the animal part: The
yolk of it digests much sooner than the white
part; many people, can digest the yolk, who cannot the white. A
sound egg is known by the small end imparting
a sense of heat to the tongue when applied to it.

They.

They may be kept a great while by covering them over with tallow or melted wax.

Condiments:- They stimulate the tongue, the salivary glands, the stomach, & promote the secretion of the gastric juice, they increase the activity of the stomach, they induce excitement & strength thro' out the whole system, & convey nourishment to the whole body. Salt promotes the digestion of fresh meat, but retards that of salt meat. Pickles when used sparingly are agreeable & not hurtful. Acid condiments lessen the viscidity of aliments. Sugar, Molasses, honey, &c. add to the nourishment of our aliments, but when taken in large quantities retards digestion. Oils facilitate the deglutition of our aliments. They also retard digestion & are very nourishing. Old English Cheese is the most stimulating food. Ice cream upon any empty stomach, induces Colic, & other diseases, but after eating, it is very agreable.

Tea & coffee add to our social & convivial pleasures. Strong tea or coffee is very beneficial, after fatigue of body, after hard drinking, after Opium or after a depressed mind. Whenever you are called to sit up all night with a sick person, strong coffee is much better than tea, to keep you awake. Strong Coffee also fortifies as against cold. Souchong tea is the best kind for use.

Drinks: they dilute to a certain degree the saliva & gastric juice, they also obtund the acrimony of our aliments. Cold water drank, when the person

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person is very warm often causes immediate death, but sometimes acute & chronic diseases. If determined to drink cold water whilst warm, grasp the vessel out of which you are about to drink, for a minute or two with both your hands. This will abstract a portion of heat from the body to the water & its effects will not be so great. If you have not a cup to drink out of, & you are obliged to drink by bringing your mouth in contact with the stream, wash your hands & face previously to drinking. By receiving a portion of water upon those parts of the body, the shock conveys away a portion of its heat. & the vital parts are thereby defended from the action of the cold. If your horse be very warm, by throwing a bucket or two of water upon him, you may let him drink as much as he will, without his receiving the least injury from it.

Labour is much better sustained by the person drinking water which has been standing a while; it allays the thirst much more in warm weather than cold water. Cold water drank just as we are going to bed, will after a while produce debility & diseases of the stomach. Water digests our aliments sooner than any other liquor. Beer is very nourishing, too much so for those who live a idle & sedentary life. One bottle of treacle to four bottles of water & sugar mixed together, & put into bottles again until it ferments affords an excellent summer drink. Cyder is very pleasant & nourishing. It sometimes produces flatulency;

ulency; this may be prevented by extinguishing a red hot iron in it before drinking. The Indians suffer less from gluttony than civilized men.(a)
The daily return of our appetite serves for many purposes; it serves to increase knowledge and sociability among mankind; it reminds us of our dependence upon the Supreme Being &c.
The appetite is sometimes an unsafe guide to direct us how much food to eat.(b) He that doubts to eat should not, because the moment he begins to doubt, he has got sufficient. If he then eats more it will be injurious to him! The taste is also an unsafe guide in directing us what quantity of food to take. The quantity & quality of our aliments should regulate us in eating! Much more & greater variety of vegetables may be eaten, than kinds of animal food, without being injurious.
Only one kind of animal food should be eaten at the same time. Fat people require less & eat less than those who are lean. A small quantity of food taken frequently is much better than two or three full meals taken in a day. Rest is favourable to digestion; wakefulness is much more favourable than sleep for digestion. If you sleep after dinner, or after a full meal, it should not be in an horizontal posture, but you should sit up in an armed chair. Your meals should be regular, that is at the same hour every day. It is a common practice in some countries to take a glass of wine & bitters before dinner, but it is a very bad

practice

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practice, & is very injurious.[a] The less drink we take before we have finished our aliments the better; it prevents digestion, & weakens the appetite. A little diminution, or total absence from our meals is serviceable to health, especially if we have a slight cold; it should also be lessened in warm weather; if you are going to perform any difficult labour or fatigue, a diminution of food is very proper. Also during the prevalence of a malignant fever. Those who partake sumptuously every day, would be less liable to disease if they would fast once in a week. It does according to Dr Franklin "give nature a holiday in order that she may clean out all her streets."

Additional quantity of food is sometimes necessary to health. Food should be well masticated, it digests much sooner. It is a very bad practice, that of drinking health at the dinner table, you are very often obliged to swallow your victuals before they are sufficiently masticated, to answer to the Gentleman who accosts you with "your good health Sir."

Age, Sex, habit &c. require different aliments and drinks. The diet of children should possess but little stimulus, but a good deal of nourishment; milk & indian corn are very good for them; after they have advanced a few years they may be allowed tea, & coffee, & boild meat or chicken; salted meat & fish should never be given to them in the morning

ing for breakfast: they should be indulged in eating very often. Sugar is very useful for children; a tea spoonful given every morning, has been found very useful, in preventing diseases from worms. Aromatic liquors & wine may be given them diluted in water, in warm weather.

Delicate children should have wine and animal food given them; broth should be preferred to meat, & boiled meat to baked or roasted.

In middle life they should pay attention to the rules which I have before laid down. In old age, syrups, meats boiled so as to be easily masticated, tea, coffee &c. & they should be very often. A much less quantity of liquor will intoxicate them, than when in middle life; you cannot restrain the appetite of an old man without its being injurious to him, if he is subject to plethora; bleeding frequently should be used, instead of restraining the appetite. When very old they require food night & day. & at all times, & they should be indulged in it.

Women require less nourishment, & less stimulating food than men. In women who give suck, the diet should be of a cordial nature.

Students, should take but a small quantity. & that which is gently stimulating, and has but little nourishment. Labourers require stimulating, & very nourishing food, such as salt meat, pork, sausages, hard boiled eggs.

eggs, onions. the last should form a part of every la-
bourers meal.

The drinks should be simple & small in quan-
tity, especially in the fore part of the day. I should
recommend it to all physicians, to carry some
kind of aliment with them, & instead of drink-
ing at every persons house they stop at, to take
a bit of whatever they have; gingerbread I think
is the best.

We here Gentlemen, take our last pleasant
view of the body of Man in its healthy State.

Pathology.

Having hitherto described the perfect & healthy state of the body, we now proceed to consider the imperfect & diseased state. — which constitutes our pathology.

Diseases are blessings in disguise: The important uses which diseases teach us to study are Anatomy. Physiology the animal & vegetable kingdom. & to exercise our mental faculties: also, by examining the functions of the body in a diseased state, we learn how to restore it to its healthy state when diseased. If we were to die in health to leave our friends, and the world in health, it would be terrible; but diseases are brought to reconcile us to that period; & sometimes when very sick even to wish death, as a desirable thing. They not only reconcile us to our own death, but & reconcile us to the pains & diseases of our friends. The celebrated Sir Wm. Penn says "He is not so great who can do great things, as he that can endure them."

As there are but few books upon Pathology, I enter upon this subject with difficulty. In the Wilderness that is before me, I therefore venture without a guide, or compass; & the system which I shall deliver will be founded upon the principles taught in our Physiology.

Pathology I define to be that part of Medicine which treats of the causes, Signs, & effects of diseases.

Diseases

Disease consists in the confused & irregular operations of disordered and debilitated nature.

They are divided into remote, predisposing, occasional or exciting & proximate causes: They are all links of one chain. & I shall illustrate them in the following manner.

The action of cold is the remote cause of an inflammation; the debility induced by it, is the predisposing cause; the heat of the weather, stove or Sun is the occasional or exciting cause; the proximate cause is that convulsion which takes place in the arterial system. The pain, heat & thirst which attend this fever, are only symptoms & signs of the proximate cause. But these causes are sometimes blended together: The symptoms of a disease are those effects which arise from pain.

Of the Proximate cause.

By this I mean, ipse morbus. the disease itself. I believe debility to be the predisposing cause of all diseases. Debility is either native or acquired.

Native debility; we bring more or less of this into the world with us. it often takes place in the womb, as in dropsy, gall stones, &c. from the intemperance of mothers. hard labour, ill usage &c. Native debility is generally followed by disease as soon as the child is born.

Acquired debility, in infancy & childhood arises from injuries received in parturition, from the custom of washing them in ardent spirits, wine Soap.

soap &c. from diet. by giving them what they cannot digest. hence the occasion of puking; by improper dressings. by making them too tight; from the improper use of opium & wine. all of which have a tendency to debilitate. By studying grammar & arithmetic when too young: from falls; from being beaten too much. or knock head. all being on debility. This debility whether native or acquired sometimes acts partially, as well as general. as in headachs &c.

They are called temperaments & are divided into four kinds. viz. the sanguineous. bilious. melancholic. & phlegmatic. I object to them. & in the place of temperament I shall put predisposition. by which I mean an aptitude to disease from native or acquired debility. This is divided into arterial. lymphatic hepatic muscular, nervous. cephalic. phrenitic. alimentary & cutaneous.

The arterial is divided into aortic, pulmonic, & uterine.

Lymphatic predisposition is when the absorbents perform their office with undue celerity.

Persons of an hepatic predisposition, when angry will discharge a great quantity of bile. In the hepatic predisposition the liber is preternaturally large. Those of muscular predisposition are in pain when at rest. they are always active. if they sit down. their hands or feet are in motion. if riding. it is as fast as the horse can go. & it is attended

tended with but little sensibility. The nervous is known by the nerves being affected from the slightest causes, hence hysterics, & the unhappy dispositions of some people. Cephalic predisposition is attended with an aptitude to headach or vertigo, it differs from phrenitic, it occupies the upper part of the brain, the cephalic the lower part.

The phrenitic predisposition induces delirium, from the slightest fever. Dean Swift compares this predisposition to a broad sword, too broad for its scabboard, it cuts it thro' & thro' when thrust into it.

Alimentary predisposition is divided into gastric & intestine. This most commonly takes place in infancy & childhood, but we sometimes see it in adults. In this predisposition the stomach is very easily excited & is very irritable; the stomach is healthy sometimes & the intestines are diseased.

Cutaneous predisposition, it discovers itself by the facility with which redness (vegetations) takes place upon the skin from the slightest causes.

Some one of these predispositions, is born in all of us. Could a child be born with a sound body & mind, it would soon acquire disease from habit. Perfect health is as rare as perfect virtue or perfect reason. More than one predisposition exists in the same person at the same time. The arterial & hepatic predispositions are generally united in warm climates. The alimentary & lymphatic often exist at the same time. The cephalic & stomachic, are sometimes blended together. The

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The predisposition to disease differ in different periods of life. A predisposition or weakness in one part, often occasions a preternatural strength of the other parts, hence we often see feeble nerves & irritable arteries, with sound & strong muscles. This predisposition sometimes extend thro' whole families without being changed; hence the origin of hereditary diseases.

The same remote causes act differently upon different people, by the predisposing causes being different in each. Time often cures diseases by wearing away the excitability; cholic, headach, & diarrhoea have often been cured by time. It is from the absence or waste of excitability that wealthy persons are seldom attacked with disease. Debility is induced with much more facility in children & convalescents, than in adults & healthy persons. Fever attacks generally after the abstraction of stimuli, hence it most frequently attacks in our sleep. Sometimes in the evening after debility from action. Excess in eating & drinking in cold weather, elevates the system above the healthy point; going into the cold depresses it below the healthy point, & thus produces disease.

It is not necessary that debility should terminate in disease; by avoiding its exciting causes we frequently prevent disease. Should a new stimulus be added, depression takes place; it is a kind of link between debility & disease. There is but

a colonel

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a cobweb partition between it an disease; but if all stimuli be kept away the system does not fall into disease. The signs of depression are general, but sometimes they are confined to one part. The signs are a sense of heaviness & weight, languor, & an inability to move, as for example costiveness is a sign of depression in the bowels; coma of depression in the brain. The point of a rod on the top of a house, does not draw the electrical fluid in a thunder storm with more certainty, than debility draws depression, & depression disease. Depression & debility often exist at the same time in different parts of the body.

A sudden loss of equilibrium sometimes produces disease; also an inequality in the circulation of the blood; & a highly excited state of the faculties of the mind. Convulsions, sometimes fever, & syncope from bloodletting, also starting in our sleep as we sometimes do, all arise from a sudden loss of the equilibrium of the system.

While constantly engaged in business or at labour, disease does not take place. Sailors & Soldiers, whilst at Sea, or marching are very healthy but after their return home, they are indolent & very frequently become diseased, it arises from the excitability of the system, bringing on depression & disease. All remote or exciting causes however diversified, are all but an unit. There

is but

is but one stimulus in the world. They are all included under the name of stimulus or irritant. Disease when excited, consists in morbid excitement only. In a morbid excitement of high degree the whole system becomes deranged; a kind of delirium affects all parts of the body; the solids are overstretched. the fluids are propelled with increased force, & certain of the functions — induce vicarious discharges. In this case the system may be compared to a ship in a storm, "Nature is driven from the helm and loses her course!" Diseases seldom exist in a simple state of the body, but generally they are combined. In fevers we sometimes find a depression of the pulse, sometimes the blood vessels are highly excited. Sometimes morbid excitement discovers itself by pain, but pain is only a symptom of disease. Morbid excitement is always partial, in fevers it is confined to the blood vessels. There is no disease which produces irregular action in every part. In diarrhoea & dysentary the bowels only are affected. Morbid excitement is sometimes fixed as in tetanus; this I shall call suffocated excitement. Equalized excitement is healthy, the reverse disease. The excitement of the system is the same in disease as in health; only it is distributed irregularly thro' out the system.

There is but one disease: I repeat it again
and again

and again, gentlemen. there is but one disease. and that is morbid excitement, or irregular action. This morbid excitement or irregular action manifests itself to the fingers when prest upon the radial artery, by preternatural fulness, force, frequency, or by preternatural slowness, intermission & depression in what are called inflammatory fevers, & by preternatural frequency without fulness or force, in what are called typhus fevers.

Thus you will perceive there is a difference between my opinions & Dr Brown's upon this subject. He supposes a fever to consist in debility. I do not believe debility to be a disease, but place it wholly in morbid excitement invited & fixed by previous debility. He makes a fever to consist in a change only of a natural action of the bloodvessels. I maintain that it consists in a preternatural & convulsive action of the bloodvessels.

Lastly, Dr Brown supposes excitement & excitability to be equal in fever. My theory supposes a reverse of this, it consists in unequal or divided excitement & excitability. All the different forms & varieties of diseases are derived from morbid excitement. It appears in different forms in different parts of the body, but it all arises from the same cause (viz. morbid excitement.) The water diffused in the ventricles of the Brain, is not the cause

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cause of the hydrocephalus internus, but it is the effects of previous morbid excitement.

That disease is an unit. I infer from analogy: there are a great variety of Storms, but they all originate from one thing. Sprm moral evil, there is but one sin, & that is selfe love; all the different varieties of sin arises from this one.

Unity in cause, variety in effect, is stamped upon the whole creation.

The effects of a disease, are disorders.

Disorders, in this country are preceded by disease, but it may come without disease. It may be compared to an ascending or descending ladder, with the following steps.

The Steps are,

Results of Ladder

1	..	Elevated excitement or natural
2	..	Debility, or the Abstraction of Stimuli.
3	..	An Increase or preternatural excitement.
4	..	Depression.
5	..	Morbid excitement.
6	..	Disease itself.
7	..	Oppression, or Suffocated excitement.
8	..	Prostration.
9	..	Disorder.
10	..	Debility.

This is the regular order in which it arises, but you are not to suppose that it always takes place exactly in this way; it very often

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often leaps over a second & produces a third; for example. from Debility it will leap over Disorder and sieze Prostration. Excitability is always necessary to produce a disease. Inflammation is the effect only of morbid excitement. It often exists without any inflammation; pus has often been seen in dissections when there was no appearance of inflammation.

There are but six primary forms of diseases viz.

I. Convulsions. in the form of Tetanus in the muscles; in the hepatics in the form of jaundice; in the bowels in the form of Colic; in the bloodvessels in the form of fever &c.

II. Spasms. They affect the stomach. as in Gastrodynia, in the lungs. as in asthma, in the uterus. as in parturition. &c. They are either tonic or clonic. Tonic is where there is a constant contraction. Clonic, where there is an alternate contraction as in parturition.

III. Preternatural Heat; it is either external or internal. The former upon the Skin. The latter in the Liver, Stomach. Intestines &c. In the Yellow-fever, there is a preternatural heat of the Stomach.

IV. Preternatural Heating; it effects external parts only. & is generally within the reach of our

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our nails. as in the Head. Arms. Pubis. Anus &c.

V. Dura Dolorifica; it consists in transient & pungent pains. which go & come. like a shock of electricity. shooting thro' the head in an instant. The Tic-dolorcux is of this kind; it generally occupies the Head. Breast. Sometimes the Limbs.

VII. Suffocated excitement; this suspends all motion. & sometimes all sensation; heat & pain attends it. It consists in such an effusion & depression. as to suspend all animation. Coldness & hemorhage are the effects only of some one of the forms which I have mentioned. There are many grades & shades of the Six primary forms before mentioned. but they do not exist seperately they are often combined.

Some parts of the body have a predisposition to one disease more than another; the bowels take on spasms more than any other part. 6 Different grades of a disease require different treatment. for example if a fever be brought on by indigestion, we treat with an Emetic. if from catarrh we Bleed.

Effects of Diseases.

1. Inflammation. this arises from an effusion of red blood into the serous vessels. These vessels are sometimes so distended with blood. as to rise above

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The blood is more languid in inflammation

Says Dr Wilson

above the surface of the skin & appear obvious to the naked eye of the Physician. As in Opthalmia, the blood rushes into the serous vessels & distends them, the eye feels as if grains of sand were in it, owing to the distention of the vessels. These vessels are sometimes ruptured & pour forth red blood. From this causes arises petechiæ on the skin. & bloody urine in malignant fevers. Inflammation is either active or passive. Congestion first begins in the veins. & not in the Arteries.

There is.

1. Increased secretion & excretion.
2. Schirrus, & other indolent tumours: this affects chiefly glandular parts.
3. Unnatural Sensibility, or unnatural irritability or both of them.
4. Eruptions.
5. Cancers.
6. The turning of certain parts into bone.
7. By producing certain changes in the Blood, & all the fluids of the body.
8. Gangrene; these all arise from the obstruction of the Serous vessels. You are not to suppose that these changes are always perceptible; diseases are sometimes too feeble to produce those changes.

Seats of Diseases.

I object to the necessity of having a knowledge of the ~~diseases~~ seats of diseases.

1. Objection. As many of the diseases are dumb, half of the

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of the viscera may be diseased, without any of the symptoms attending it, to give us the seat of the disease. That is they do not shew their existence by pain swelling, or fever. The Liver is sometimes absorbed without causing pain.

2. From certain sensations being made in a part from whence the disease does not arise, which often leads us to an error, in the natural seat of the disease. These sensations occur most frequently in the viscera. bowels

3. From the seats of diseases changing with the weather, which they often do. From the use of certain remedies. & from its necessary stages, it frequently changes its seat.

4. Will the dissection of dead bodies give us an idea of the seats of diseases? By no means: in dissections the parts will often be found perfectly natural without the least sign of a disease. I have in my own dissections found this to be the case. This I have decided arises from morbid excitement, transcending inflammation. Dissections shew us the effects of disease & not the causes. Tubercles on the Lungs is not the cause, but the effect of disease.

Nothing is to be gained by curing a disease, by knowing its seat. I care nothing about where the seat of the disease is, but only its different grades. In diseases of the head, it yields most easily by purging: of the lungs, by bleeding. But is pain the only sign of disease? By no means: our arms have the

have the principal signs of disease; I mean the pulse.
Happy for us when the pulse fails which very rarely happens. pain. heat. inquietude. the countenance &c. are vicarious part. It is a guide to all our diseases. It conveys more knowledge to us than all the other signs. By means of the pulse I have often found out a disease of which the patient did not complain. of till after I had mentioned to him.
There can be diseases without pain, but there can be no pain without disease. A Lady in the third month of her pregnancy, was seized with a pain in the uterus. (called uterine colic). I was sent for. I ordered ℥x of blood to be taken from her; the pain removed from one part to another. I pursued them with the lancet; I bled her ten times, purged her daily & cured her effectually.
The arterial system. with all the viscera, are but an unit in disease.

Signs of Diseases.

They are divided into common & proper. primary. & secondary.
Thirst & heat are the common signs of a fever.
Pain in the side is a proper & primary sign of a pleurisy. Difficult respiration which is the effect of disease, is a secondary sign.
Sympathies of the parts to each other are very different in disease, to what they are in health.
Signs of disease differ in different persons according to the predisposition, & according to the force

force of the disorder. The hydrocephalus internus is the same, whether it arise from worms or any other cause.

The signs of diseases are also divided into Diagnostic and Pathognomonic.

Diagnostic is the sign by which we distinguish one disease from another.

Pathognomonic is that which designates the particular sign of a disease. Thus a dilated pupil is a pathognomonic sign of hydrocephalus internus. They are however both uncertain Symptoms & signs first relate to predisposition costiveness is a predisposition to Dysentary.

Causes of Pain.

The action of Stimuli over distending the parts, & occasioning an irregular action by the solution of continuity, is the cause of pain. Certain chemical stimuli also produce pain.

The stimulus of acid bile upon the stomach is the cause of pain in the Cholic. If you put a blistering plaister on your patient, before he has arrived at the blistering point, you cannot excite a blister.

Altho' pain is an unit, yet it imparts different sensations in different parts, as burning in the skin, throbbing in external fleshy parts, opening & shutting when it affects the whole

brain

brain &c. It also varies in its nature & causes, a dull instrument produces a dull pain. It affects different parts at the same time, & there are different shades & grades of the same pain; & it is more acute according to the smallness of the nerves, & the number of them which are affected.

The head is most subject to pain from sympathy, next the stomach.

Women feel pain most during menstruation & pregnancy. They indure pain better than men because their system falls more rapidly to the insensible point. People generally bear pain better when it is alternate or when it comes on gradually.

Anxiety. this is felt in congestion.

Nausea is a deranged state of the nerves of the Stomach, & it is confined to the Stomach only.

Diseases are divided into Idiopathic and Symptomatic. This division is by no means sufficient; for instance, Tetanus from a wound, is said to be an idiopathic disease, but it may arise from many other causes.

They are also divided into acute & chronic. Protracted would perhaps be better than chronic, in some cases.

Chronic diseases arise more or less from neglected or half cured diseases.

They are also divided into Epidemic, Endemic, Sporadic, Intercurrent & Contagious.

Epidemic

Epidemic diseases, are those, which are contagious, as the Measles, Small Pox. They hold communities nearly at the same time. They arise from the insensible quatities of the air, & from contagion.

Endemic, as glandular swellings, &c. or those diseases diseases which are peculiar to a certain place. The plague & yellow fever are both endemic & epidemic in America.

Sporadic, are solitary cases of disease scattered about thro' a town or country, which become epidemic.

Intercurrent, are those diseases which are produced by heat, cold &c. as Catarrh, Rheumatism, Pneumony &c.

Contagious, are those diseases which take effect from the air, & from contact, as the influenza, syphilis &c.

Of the Remote Causes of disease.

Without a knowledge of the remote causes, we should not be able to prevent or remove the disease. The first thing to be done in the cure of a disease is to remove the remote cause. We proceed next to consider the remote, predisposing & exciting causes of disease. This is an important subject, & should require your particular attention.

All febrile diseases as well as almost other diseases, are derived from the Atmosphere.

1. It produces its effects upon us when we are sensible of it

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sible of it.
2. When we are not sensible of it.

II. Its Sensible Effects, are heat, cold, moisture, dryness, rarity & density.

The positive effects of heat are divided into hot, warm, temperate, cool, or cold. Hot air exceeds 96°. warm between 96° & 75° temperate between 75° & 65° cool between 65° & 32° cold below 32°. Of the positive effects of heat upon the body. From 62° to 65° is the most agreeable heat in persons of middle life. Heat produces agreeable sensations, by its stimulating effects. Heat produces depression in the arterial system & excitability in the nerves, hence the frequency of syncope in warm weather. It produces irritability in the muscles. It causes sleep in the day & waking in the night. Sometimes it prostrates the system suddenly by Insolation, or what is called a Stroke of the Sun. It affects the mind at first with sprightliness, but after a while with irascibility, & a disposition to mania. It dulls the sensation of touch, weakens the sense of taste, & smell, & effects the hearing. Probably by altering the fluids upon the membrane. It disposes to Gutta serena, Ophthalmia &c. It affects the Stomach at first with an inordinate appetite, after a while with a weak one. In the bowels it causes Cholera morbus, diarrhoea & dysentary. Upon the Liver it pro-

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it produces an increased secretion of bile, also increases its acrimony, it also disposes to inflammation of the Liver. In the Skin by imparting a centrifugal direction to the blood it produces buboes, small biles, prickly heat, perspiration & sweating. And in some cases an uncommon dryness.

Perspiration is much more acrid in Summer than in winter & is much more stimulating. It is much greater in warm than in cold climates.

Hence a Summer Cold is much more dangerous than a winter one. when it falls upon the lungs, from the perspiration being more acrid.

Heat increases the venereal appetite, hence the cause of the greater number of births in the winter than at any other time. This has been satisfactorily proved by Dr Rosiana of Gettingen. It also lessens the density of the Solids of the body.

Relative Effects of Heat.

The morbid effects of heat are lessened by the following causes.

Heat when uniform & dry is healthy. Diseases which occur in dry & warm seasons are not so malignant as those of wet & variable seasons.

The morbid effects of heat are lessened by time & habit. dry wind & motion also lessen its morbid effects. by exciting perspiration, which prevents a stagnation of the fluids. Migration, abstinence from food, eating only vegetables & drinking only water lessens the morbid effects.

The morbid

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The morbid effects of heat, are increased as follows.
1. Previous exposure to cold, as pneumony, angina pectoris &c. are generally preceded by cold.
The sudden application of heat to frozen feet generally produces Mortification. When it does not produce mortification, it occasions violent pain.
Moisture of the Atmosphere increases its morbid effects. Heat is rendered more debilitating when applied to the body in the form of Winds.
Heat is more certainly a remote cause of disease when miasmata exists along with it. Heat alternated with cold increases its morbid effects. Absence of wind & calm seasons are generally unhealthy.
The same degree of heat applied to the body in its natural state. I would not injure it, while when it is applied to the system after it is elevated above the natural state, increase its morbid effects.
A moist & temperate air affects the skin. The white & red appearances of the Skin upon the face, arise from the action of the moist & temperate air upon it.

Morbid Effects of Cold.

They are divided into Laxative Sedative.
Cold is a negative quality & acts only as a sedative; that it acts as a Sedative I infer, from the contraction & debility of the skin from its effects, from the slowness & weakness of the pulse in cold weather, from its effects in certain high toned
diseases

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diseases. To this opinion there are many objections. it differs greatly from Dr's Cullen & Currie.

The followers of Dr Cullen. who beleive that cold acts as a stimulus. make the following objections

1. That the pain which is produced by cold proves its stimulating powers. This is not the case. the pain induced by the cold. arises from contraction of the parts. by pressure upon the nerves. by which means heat is abstracted & pain is produced. Pressure of the hand upon a part produces cold. A sponge is a stimulus in its first operation. & afterwards a sedative. Thus cold is a sedative in its first operation & is a stimulus in a secondary & accidental manner.

2. Cold (say they) causes a redness of the part to which it is applied; this is true, but when cold first acts. it produces a paleness or bluish appearance of the part. which afterwards becomes red.

3 Cold bath is said to act as a stimulus. It acts only by its weight. & by its abstracting heat.

4. It is said to be a stimulus from its increasing the secretion of tears. This is owing to a torpid of the Lymphatics.

It does not act by stimulating but by abstraction. A person fainting is cured by throwing cold water in his face. its effects are not stimulating. it is by its weight on the face, it acts by suddenly destroying the equilibrium of the system. Cold is the effect only of the abstraction of heat. It produces debility

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bility & excitability in the arterial system. When it is intense, it causes pain in the breast, sometimes haemoptysis, & sometimes it causes old sores to bleed: It causes torpor in the nerves, languor in the muscles, in the brain pain, sleepiness & sometimes death. On the faculties of the mind it produces debility. It dulls the sense of taste, it lessens the sense of vision, invigorates the appetite.

Horses eat more in open & cold stables, than in warm ones. It induces various effects upon the skin. It renders sweating difficult; it disposes to cutaneous eruptions. When applied a long time it makes the skin of a dark colour. it lessens the venereal appetite; attracts the solids: lessens the human body. Cold counteracts by increasing the tendency to a solution of continuity.

I conclude therefore that as moral evil is the effect of the abstraction of moral Good; as darkness is the effect of the abstraction of light; & as debility is the effect of the abstraction of strength; so Cold is the effect of the abstraction of heat.

Relative Effects of Cold.

Its morbid effects are lessened by its uniformity; a cold and dry winter is generally healthy. Diseases are locked up during the winter in Canada & Russia, owing to the uniformity of the cold. It is lessened by time & habit, by its insen-

sibility

* The whole brute creation groan under it. It may be considered as the exciting cause of all diseases.

sibiletty; by the natural insinsibilety of certain parts of the body; the lungs are most insensible parts of the body to the effects of cold. It is less hurtful in persons of a nervous disposition. & less so, in children than in men.

It is increased by previous heat, according to its degree & duration. The diseases produced by the sudden reduction from heat or cold, are spasms, convulsions & numbness. From the greater or less excitabitely of the System; according to its greater or less variation; according as it is applied to a part, or the whole; pouring water in the sleeve when the arm is elevated is very painful; it is one of the punishments made use of, on the criminals in the Pennsylvania Gaol. Wind & moisture increase its effects; Drunkards are more affected with cold than sober people; they have a predispotition to cold; an empty Stomach increases its morbis effects. It acts more certainly in the sleeping than in the waking State. It is more hurtful in summer than in winter, owing to the pernicious miasmata which attends it. There does not exist, upon this Globe a greater enemy to the life & health of Mankind, than Cold. *

Cold is not an inchoersible law of nature. Thick walls, double windows, close stoves in the house, when abroad, furs & foot stoves, preserve the heat of the

Canadians

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Canadians & Russians. Cold attended with moisture increases its morbid effects; constant labour, & suitable cloathing, protects the body from moisture. Air highly rarified produces many diseases. The Spaniards say "be old while — young, and you will be young when old."

III. Of the Insensible Effects of the Atmosphere.

Marsh exhalations: they proceed from putrid animal & vegitable substances, arising out of low & marshy places & floating in the air, it is called Heimo-miasmata according to Dr Miller. Private exhalations or Idio-miasmatic exhalations; these are the exhalations which produce inflammatory diseases.

Certain matters generated in the body known by the name of Contagion. Certain matters discharged from the lungs, carbonic acid, hydrogen gas, the winds called Seamoon, vapours from earthquakes & springs, air mixed with sulphuric acid, close stoves & ovens, all increase the morbid effects of cold.

Heimo-miasmata arises from vegetable or animal substances acted upon by heat, or a compound of both of them, heat & moisture. The sun exhales nothing from the dry ground, nor from marshes — overflowed with water: heavy rains prevent exhalations. Marshy & low grounds when dry, do not produce fevers, there are however a few exceptions; fissures or cracks, which are often made in dry seasons

allows

from

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allows the putrid substances to send out exhalations — they are called the breath of the Earth.

Marsh miasmata is most noxious in the morning & in the evening. & they effect the young & robust people the most. They are least hurtful in the middle of the day & middle of the night. La Place says exhalations may be carried by the wind & communicate its effects at nine miles distant from its origin. They generally travel in the course of the Wind.

Sporadic cases of Yellow Fever in the winter & Spring arises from the miasmata which is remaining floating through the air & by the predisposition of the person to that disease. affects him only. & not others. Or it may arise from the noxious air of cellars, ponds, & stagnates waters. Miasmata acts most certainly in moist weather. it is varied by climate & season. They are most malignat in countries. where there is no alternation of heat & cold. It causes in the arterial system. the Yellow Fever & first grade of the Inflammatory bilious fever & the second grade of the Plague. The mild remitting & the third grade of the Plague. Intermitting. Chronic & Febricula fevers. In the stomach is causes vomiting & nausa and inflammation in the bowels. cholera morbus, — cholic, diarhœa & dysentary: in the Liver preternatural secretion & excretion of bile, & change in its colour. & very frequently inflammation & sup-

puration

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puration & obstruction. in the Spleen, great congestion & enlargement of it. & sometimes complete disorganization without any disease: in the kidneys & lungs inflammation & obstruction; in the muscles, nerves & mind, it produces convulsion, — coma, & insanity; in the lymphatics & glands, — dropsy & glandular swellings: on the skin, erysipelas, bile, & eruptions. Black blood arises from the absorption of black bile. The black colour of the skin arises from the absorption of the black bile. contaminating & imparting its effects to the Skin changing it to a black. hence the black Jaundice.

Its local effects produce ophthalmia, pains of the head, jaws back &c. They are the most general sources of disease.

The most general putrid substances from which exhalations arise are putrid cabbage potatoes, turnips indian meal, coffee, bilge water, stagnated water &c.

The miasmata are destroyed by intense heat, by air & by frost: for the artificial method of destroying them, see the fourth volume of my enquiries

Of Idio-miasmata. or,

Miasmata from living bodies: It arises from a want of cleanliness. This is a fruitful source of disease; linen cloathes are supposed to derive more of their morbid miasmata than woollen. but does not retain it so long,

pond

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from being confined in crowds, as in goals & hospitals, from scantiness of aliment & its quality; from chronic Hemo-miasmata, from depression of the mind, & from the mixture of Strangers with each other. The disease produced in this way is propagated by what I call contagious excretion.

Human miasmata: it is derived chiefly from perspirable matter. The other excretions will produce it, but in a much less degree. Clothes or linnen taken off of a diseased person, should be exposed to the air for some time, before they are put into the clothes bag. This miasmata is more active in winter, than in summer. Of this I saw many instances in the military hospitals, during the American Revolution. It adheres to all kinds of clothing but more particularly to woollen, flannel, worsted, cotton clothes, & linnen curtains. I once knew the Gaol Fever affect a person from his tying a stocking round his neck several days after another who had worn it & was ill of the disease, had thrown it off. Ground floors & white washed walls, prevents the fevers in goals & hospitals.

Persons will by their perspiration convey disease to other persons, by receiving it from an affected person, & will not take it themselves.

Solitary cases are induced by the effects of their own perspiration. Cold generally increases the

effects.

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effects of disease in the hospitals of the American Army. This was most obvious when the Soldiers were confined during the cold weather. Feeble & debilitated persons, are most liable to the effects of human miasma. It has been observed that pregnant women, & persons with abcesses escape it. A depression of the mind increases its morbid effects. It induces in the arterial system, typhus & chronic fevers: in the nerves, torpor; in the alimentary canal dysentery; in the muscles, tremor; & in the head it produces pain. Sometimes it produces influenza. & instances have occurred of its producing the scurvy. Fevers & dysentery arising from this miasma, are propagated by contagion. Contagion is of two kinds, by secretion & by excretion. the small pox is contagious by secretion the goal fever by excretion. The Hospital fever differs from the bilious fever as follows. It prevails in cool or cold climates. debilitates the system, & continues from fifteen to thirty days. & it propagates itself by excretion. The bilious fever prevails only in the Summer & autumn. It is attended with remissions. It is never contagious except in its protracted state. It is destroyed by heavy rains & frost. the hospital fever is not.

Of the Insensible qualities of Miasma.

The remote causes of influenza arises from something floating in the Atmosphere. this I infer, from the rapidity with which it attacks many persons at the same time, & which are distant from each other.

The

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The small pox & measles do not pass with the fifteenth part the rapidity. The influenza acts not by contagion. it begins at half a dozen places at the same time. That it does not arise from contagion I infer. from no one being able to find out where it first originated. from those taking it who have had no intercourse with those who have it; it has often been traced to one person coming into a town and spreading it: this may proceed from his breath; sometimes it is produced by accidental coincidence. Another circumstance very much in favour of the Influenza not spreading by contagion is that in a certain Island in Scotland; if a Stranger comes there. the inhabitants are all affected with Catarh & Influenza. Matters which are secreted are called Specific Contagion.

The small pox. measles. chicken pox. hooping cough. & perhaps scarlet fever. all spread by this contagion. The small pox, measles &c. are produced without any exciting cause. they are never taken but once during life. a few exceptions only.

Small pox is sometimes taken by infection as well as by contagion. Scarlatina & Hangina. arise from the atmosphere. Matter discharged from the lungs when confined or undilated with the common air, produces disease & sometimes death.

The carbonic acid discharged from calcareous earths induces. giddiness. nausea. headach, vomiting

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vomiting & frequently death: In those who die from this cause, the lungs are found so collapsed as to sink in the water. It is so much heavier than common air that it exists near the earth's surface.

Hydrogen gas sometimes mixing with the common air produces disease & often sudden death. This sometimes takes place in subterraneous cells. A certain species of wind called the Seamoon. flying & mixing in the common air produces its diluting effects: the people avoid it in that country by falling down & laying till it passes over them: When a person dies from the effects of these winds, he putrefies immediately.

Vapour from earthquakes mixing with the air produces disease & sometimes death; the vapour from springs occasions diseases

Air is unhealthy when mixed with sulphuric acid. Close stoves are unhealthy, by absorbing the moisture in the room. this may be prevented by placing a bowl of water upon the stove. it throws off the vapour from it, & thus prevents the room from getting too dry & unhealthy.

Certain odours & spices cause disease: Particles of sand, dust, smoke &c. all have been productive of Opthalmia. The dust flying from the grinding of needles, is said to bring on phthisis pulmonalis. A certain something impregnating

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impregnating the air produces pestilential diseases. Remote causes are seldom able to produce disease without an exciting cause.

Of the Sensible Qualities.

They are divided into rarity & density. There exists at all times a certain portion of air in our bodies if it be highly rarified it brings on palpitation of the heart, loathing of the Stomach. By pressing the lungs it prevents the return of the blood & causes cephalic congestion; rarity & density act relatively. Sores are often made worse by the weight of the Air.

In bilious fevers wind enantes from the blood vessels into the body. & produces belchings and hiccups.

Winds are either hot or cold, wet or dry. In the United States, hot winds come from the South, cold from the North, because they arise from Canada. dry windy from the West, because they pass over hilly countries, wet from the East, because they come from across the Atlantic Ocean.

Heat is lessened & cold increased by Winds. Cold is also increased by moist air. The transition of heat to cold, accompanied with wind, occasions debility. Catarrhs are most common during this time. When it changes suddenly from one quarter to another, it very frequently changes proves injurious. The Northeast wind effects people in the middle States of America. The east wind is very unfriendly to persons afflicted.

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flicted with asthma and consumption.

Changes of the Wind.

They act most uniformly upon invalids. East winds affect invalids, & they also hasten parturition. Heat & cold are most intense in the United States: the former fluctuating from 80° to 90°, the latter from 30° to 40°. There falls more rain in the United States, than in any part of Europe. Evaporations are more rapid here, than in Europe from our constant winds & from the dryness of Europe.

Pneumony, Angina, Rheumatism, Opthalmia, & catarrh, are the most common diseases in the U. States; the latter is more common here than in any other part of the world, Great Britain excepted. Our churches & our public assemblies bear witness to this. Gout arises from heat & cold exciting it.

March winds are the most dry & of course the most healthy. This is proved by the splitting of boards in this month more than in any other month in the year; hence carpenters always prefer laying floors at this time. The Northern winds in Madrid have the salutary effects. The air acts differently in different seasons, months & in different towns & countries, according as it is impregnated with miasma.

Sensible Qualities of the Air.

In one of the seasons, they are morbid. In Boileau in Franke, the greatest number die in winter; the number of deaths there in one winter were 363.

The spring & summer are generally most healthy in all parts between 50° & 30°.

In 1772. the greatest number of deaths in this City were in January. June & July are generally the most healthy; the latter end of July is sometimes fatal to Children, but June is the most healthy of any other month. Sickly seasons beg in here about the 20th of August; they arises from the people exposing themselves, to the heavy dews which fall at night, in their thin summer dresses.

In what manner are foreign & extraneous matters taken into the body?

They are said to be taken in, first,

1. By means of the Lungs in inspiration.
2. By means of the Olfactory nerves.
3. By means of the Saliva into the Stomach & Bowels.
4. By means of the absorbants. This last opinion I reject: That it is not taken in by the Absorbants, I infer, from this: that in binding small pox matter on the Arm, unless there be some external wound in the Skin, it will not take effect. I have doubts also of the Miasma affecting the body, when taken in by the Saliva.

Vomiting, Inflammation of the Liver & some other diseases generally arise primarily from affections

affections of the Brain.

It is no argument that fevers are absorbed by the Skin, from the Itch Venereal being taken in that way. The Itch only affects the Skin; the venereal only when in contact with sores, or with the sensible parts of the penis.

The miasma taken in by the olfactory nerves, are inoffensive till they effect the nervous system; that the nervous system is first affected, I infer from the pain which is felt.

Dr Black says, there is not so much danger in receiving the miasma, thro' the Lungs, as there is thro' the Nerves.

Epidemics arise from the insensible qualities of the air. I include all those diseases from being Epidemics, which arise from the sensible qualities of the air, from Idio-miasmatic exhalations, & those which arise from bad water, & other exhalations.

Six Laws of Epidemics.

I. All epidemics are more or less affected by the sensible qualities of the air. These are heat, cold, moisture, dryness, rarity, & density. There is however a few exceptions; the Influenza prevails at all times.

III. Epidemics sometimes prevail from the provision & drinks of the current year.

IIII.

III. No two Epidemics can act upon the bloodvessels at one & the same time. if they arise from the same cause & act with the same force.

IV. When two or three Epidemics appear at the same time, one will generally predominate over the other. Even contagious fevers blend themselves with fevers from human miasmata, & sensible qualities of the Air.

V. Epidemics sometimes chase all other diseases away. Epidemics of great force are sometimes chased away by others of less force. Thus we see the small pox chase away the plague; the measles the small pox; & the influenza & the measles; all of which are much milder diseases than those they chase away. This arises from the system, becoming accustomed to the qualities which produced it, & new qualities of an inferior kind acting upon it, excite a new cause.

VI. Epidemics appear in many different forms, varieties, & times.

1. It appears with different degrees of force. The Small Pox is sometimes so violent, as to cover the whole body with petechia; at other times the variolus fever is attended with but very few pock.

2. With different symptoms of the same disease Epidemics of different years be attended with different degrees of mortality.

3. Epidemics from the same cause, effect different.

ferent part of the body, in different persons according to their predispisition. The more general an epidemic, the more uniform it is.
4. Sometimes it effects whole communities without an exciting cause, sometimes with. The small pox, measles, influenza come without an exciting cause. The Yellow Fever with an exciting Cause.
5 Epidemics generally come on with great force & go off with less violence.
6. Sometimes they disappear from sudden changes in the weather.
7. They are different in different places. This arises from local causes.
8. They appear in different parts of a town or city, sometimes locally.
9. They appear in different countries.
10. Sometimes affect people of one colour only.
11. Sometimes persons of a certain age only.
12. They sometimes affect persons of one sex only.
13. Sometimes persons of a certain rank only according to their manner of living.
14. They sometimes effect members of the same community, & of the same family only when very distant from each other.
15 Sometimes persons of all countries, ages, sexes, ranks, & predispositions, are affected by it at one & the same time; in short no mode of life is defended from it. The plague often prevails in this.

in this way.
16. Sometimes not only the human species but also a few quadrupeds are affected by it. Fish also are sometimes affected, as well as land animals.
17. The same remedies which have been used with success, in this disease at one time, will at another time be hurtful. It must be evident from what has been said, that no uniform method of curing diseases can be used.

There is no uniform treatment of Epidemics, for they do not succeed each other regularly, but in general very irregular. Epidemics and Endemics seem to annihilate each other.

The diseases which follow Epidemics are generally of an Inflammatory kind.

The exciting causes of Epidemics may be removed by artificial means, & the Yellow Fever extirpated from our Country.

Influence of Situation upon Health.

It is influenced, by countries, cities soils & climates. Countries are more or less healthy according as they are cleared or cultivated. Death is a very rare thing in a new country. The first act of clearing a new country is to produce febrile diseases; especially if the ground be moist & low so as not to be cultivated they But when they can be cultivated they are most favourable.

Those which are not cleared are the most healthy. Cultivation is favourable to health. The chief diseases

diseases produced by the mixture of air. are inflammatory diseases, fevers, and dysentary. The dysentery is Epidemic only in Countries owing to the rapid vegetables which are eaten by the Inhabitants. Towns & cities are the jails of disease from the great number of persons confined in them. Impure air from the filth of gutters, and sewers, bad water &c. all render situations more or less unhealthy. The diseases chiefly produced by the air, are bilious fevers, nervous diseases & dysentary. The dysentery is less common in Cities. owing to the Citizens drinking tea & coffee. Sandy soils are unhealthy from their retaining & reflecting more heat which is very injurious, especially to the Eyes. Mountainous Countries, are healthier than low Countries, with now & then an exception. The Soldiers in the higher ps of Calcutta were very unhealthy & much more sickly than those which were quartered in the valley. Intermitting & bilious fevers generally follow the raising of Mill-Ponds. The planting of trees around them, prevents fever from its exhalations. They prevent the Sun from acting upon the shores of the Pond. The air from the sea shore is injurious; residing in a cellar or hospital is unhealthy; a house built of green or unseasoned wood, from the sap which is confined in boards, putrifying. which is very.

is very unwholesome. This may be prevented by soaking the boards in water, it takes the sap out: From its being built of stone newly dug from their being impregnated with animal & vegitable matters, which by putrifying become very unhealthy: From its being newly plaistered, or painted: Having a close cellar, with an internal staircase, communicating with the other parts of the house; this may be prevented by having an outside door, or a chimney in it, to let the putrid air pass out: From the cellar having water in it after a rain, this may be prevented by digging a ditch round the house deeper than the cellar, or by digging down to gravel. An old house, small close & smoky rooms, want of cleanliness, bad water &c. are more or less unhealthy. It is unhealthy by being too much surrounded with trees. A house should be built with its front to the South, in order to make it healthy, and should be built low in the Country. Houses thus built are cool in summer & warm in winter.

Of the Effects arising from a Change of Climate.

Persons migrating from one country to another, generally like but a short time; more especially, if they pass from a cold to a warm climate. Old people who move from marshy, to high & hilly countries die very soon afterwards.

Persons

Persons who have been long voyages are generally affected with Catarh, when they approach the Shore owing to the mixture of land & sea air.

Of the Influence of the Heavenly Bodies upon Health.

Under this head I include the Sun, Moon, & Earth.

The Sun from its great light sometimes produces Inflammation of the Eyes. & sometimes temporary blindness. & likewise inflammation of the skin of the face. I have known two cases of headach to come on at the rising of the Sun. & go off at its setting. Darkness affects the health: it produces perspiration & predisposes to disease, & occasions paleness, which is frequently seen in those who are confined in dungeons & dark places any length of time. It sometimes produces temporary blindness. It also reduces the force & frequency of the pulse. Diseases generally attack at night. & nineteen out of twenty persons die at night. May this not be owing in part, to the abstraction of the stimulus of light?

The Moon has an effect upon matter, air, vegetables, & over animals, as well as man. Oysters are said to be much better at the full of the Moon than at any other time. Man in a healthy state does not feel the effects of it, but the violences of fevers are increased, & prevail more just before

and

and after the full Moon. Sometimes hæmoptysis is effected by it. Paroxysms of the Gout happen often after the full of the Moon. Also at other time in some people. Parturition is hastened by it.

Maniacs have more violent paroxysms at the full of the Moon, hence it is called Lunacy, but this is not universal among them; it generally happens before morbid excitement has taken place. The mind is sometimes effected by it. Suicide is said to be committed mostly at the full of the Moon. Epilepsy & Asthma are influenced by it. Chronic diseases feel the effects of the Moon less than acute diseases.

The "Eclipses of the Sun and Moon" have an influence upon Health.

Lord Bacon used to faint when the Moon was eclipsed. In the eclipse of the Sun in 1806 all the maniacal patients in the Pennsylvania Hospital were silent, as soon as it was over, they become noisy again.

Twenty five british Soldiers were affected with an intermitting fever in Holland. at an "Eclipse of the Sun."

The Earth has an effect upon health.
The body feels the annual & diurnal revolutions of it. Apoplexy and Palsy most frequency about the Equinoxes. Invalids should avoid

exercise

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exercise in the evening & should go to bed early.

I have thus far given you facts concerning the influence of the Sun, Moon & Earth upon Health. Diseases are supposed to be influenced by the Sun, but I think & think it is only from the light and the rarity of air, that arises from it.

We require more or less light to stimulate us to awake from sleep, habit alone will not. If a person accustomed to sleep in a light room, be put into a dark room, he will sleep much longer, than when he slept in the light room.

Maniacs are more quiet in a dark room. The return of an Intermittent fever has been prevented by the patients sleeping in a dark room.

Influence of Thunder & Lightning upon Health.

There are some people who seem as if they were born in a Thunder phobia (if I may use the expression.) I escaped the Ocean with a Lady who could tell, when a thunder Storm was rising, by her head beginning to ache, which always continued until the Storm was over, & then ceased. I knew a woman who, in a thunderstorm, would have all the appearances of a person in the agonies of death. & she was kept alive during the Storm, by drinking large quantities of

Madeira

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Ardent Spirits, & it never intoxicated her, owing to the excitement & excitability being suffocated.

The ringing of bells has been known to bring on Parturition.

Of the Influence of Aliments & Drinks and their quantity & quality on health.

A greater number of diseases are produced by means of aliments & drinks, than in any other way.

Quantity influences by its distention & by its nourishment. It sometimes brings on Apoplexy & Palsey. Too much nourishment taken into the system, predisposes to plethora & many other diseases. It lays the foundation of two bad practices, viz. drinking & smoaking. Men who labour suffer less from eating too much, than those who are idle. From 4 to 8 lbs of animal food is sufficient for men who do not labour.

The quantity should be regulated according to their quality. A person will eat 30 lbs of Watermelon, & does not receive as much nourishment from it, as from a few pounds of meat. Water is not inert in the system, it contains a good deal of nourishment.

Diseases from want of Aliment appear to affect three classes of people only, viz. Children, Slaves, and persons who have doubts about their religion.

In Children

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In Children the diseases produced are, diarrhœa, cholera morbus and emaciation.

In Slaves, from their want of aliment, it produces stomach complaints.

Abstinence from food by superstitious people is often carried so far as to produce disease.

Famine accumulates excitability, distends the Gall-bladder, discharges the bile into the stomach, excoriates the Mouth & occasions a fœtid breath. Extreme hunger increases strength, from the great stimulus of the desire of food & from the desire of life, acting upon the accumulated excitability of the System. It has been so excessive as to cause persons to devour one another. Man was made to accommodate himself to all kinds of food.

Quality influences health. Those who live upon fish are often affected with the Itch; changes of the colour of the skin, & malignant ulcers, &c &c. Animal food produces fœtid sweats & fœtid urine, diarrhœa, hemorrhage, & scurvy. Pork & meat if very fat produce the same effects. Men are said to have less strength who live upon wild animals, than those who live upon domestic; this arises from the wild animals digesting much sooner in the stomach than domestic. The Indians have more activity, but

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tivity, but less strength than white meat, owing to their living upon wild animals only.

Vegetables. many nations have lived & still live upon them. Notwithstanding many nations live upon them & are healthy, yet they very frequently produce diseases. The constant use of them causes universal weakness irritability of body & mind. dropsical swelling, dyspepsia, dysentary & deficiency of the venereal appetite. it also lessens the heat & vigor of the human body. Beans produces flatulancy, & chesnuts when green, debility. Cabbage produces flatulancy & indigestion. Milk in its simple state produces headach, flatulency & cholic. Cheese the heart-burn.

Of the Manner of preparing Food.

Food is more or less wholesom according to the time in which it is kept before eaten. Flesh if eaten too soon after it is killed, is not easily digested; if kept too long produces diarrhoea. Fish when kept a few days produces diarrhoea diseases of the bowels & stomach. Lobsters & crabs produce the same effects of fish. Oysters when over done have produced colic & some other diseases. Eggs when boiled soft are easily digested, but when hard, are very difficult. Vegetables of a putrid nature are very unhealthy.

Bread

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Bread half baked, produces colic & in one instance Asphyxia. I know of one instance in which toasted cheese produced apoplexy. Swallowing food without masticating it sufficiently, is unhealthy; this happens 1. From absence of mind. 2. From drinking healths 3. From conversation. 4. From eating in a great hurry. Aliments sometimes induce disease, altho' wholesome, when taken at too long intervals. All kinds of food, if taken in great quantities, after long fasting, cause disease and sometimes death. Convalescents & valetudinarians when travelling, should always carry food with them, if they cannot stop every hour & get it, for they should eat five or six times in a day. & a small quantity at a time.

Changing the diet from animal to vegetable only produces costiveness & sometimes disease. This is often observed in our Jails. The changing from vegetables to animal food has brought on phrenzy. & is productive of other diseases. The most dangerous relapses arise from this cause, viz. from convalescents after having dieted for some time on vegetables, eating too much animal food. Diseases are often brought on from an improper mixture of Aliments. They sometimes induce disease, from eating them when too hot or too cold. Major Reed Member of Congress in the state of Pennsylvania died of a

sillabus.

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schirres stomach brought on by eating ice creams on a hot summers day. Liquid aliment sometimes causes diseases. No animal takes liquid food but man, & he acquires it from a civilized life. Novelty of food sometimes causes diseases. Aliment chance disease from lying in the stomach undigested for some time. They induce disease by being cooked in unwholesome vessels; Lead & copper vessels are the most unhealthy. Since the production of iron instruments for cookery, the stomach complaints are much lessened; they induce disease from not being perfectly cleaned after they have been used. 6 Disease is sometimes brought on, by eating animals, that have lived on unwholesome food.

The Deer after having fed upon the laurel is poisonous to dogs. Some years ago sixty of the students in Princeton College were affected with diarrhoea after dining on Pidgeons, which had lived on poke-berries. Aliments are more or less healthy in proportion as they are salted. Where salted meat is taken in moderate quantities with vegetables it is healthy, when it is eaten without vegetables it produces scurvy.

Of the Effects of Condiments upon Health.

They are Salt, vinegar, mustard, sugar, saccharine, juices and spices.

The use & desire of common salt in our aliments is nearly universal, & it is healthy. The principal disease which they cause is the scurvy.

Vinegar took in large quantities produces gastrodynia, dysentery, dyspepsia, & other complaints. I know a Lady who is now very much afflicted with stomach complaints, which she brought on by the immoderate use of vinegar.

Mustard when taken in excess produces Gastrodynia & Inflammation of the Stomach. Baron Steuben said of a certain person, that his kitchen resembled an Apothecaries shop, such was the number of his spices, condiments, & drinks.

Sugar taken in large quantities, produces distressing complaints. I have known dyspepsia to be brought on a Merchant from his tasting a great many different kinds of Sugar.

I have heard of the enlargement of the testicles to be brought on by an excess in the use of red pepper.

Strong tea causes wakefulness in some people: It affects Women more than Men: from their drinking it stronger. they are often affected with gout.

gout. colic. dyspepsia & headach. Tea is certainly far preferable to Ardent Spirits which produces Arthritic Gout. Tea, Gout in the Stomach only. Strong coffee often induces nervous diseases. I have known it to cause vertigo, which was cured by abstaining from it.

Of Drinks.

Man stands in as much need of drinks as of Aliments. Water produces diseases.

1. By its sensible qualities.
2. By its being mixed with other impure substances.
3. By drinking too much.

The sensible qualities. arises from the cold which makes the teeth ache very much. The effects of cold water are more or less according to the temperature of the System when it is taken. The common effects are a violent & sudden spasm of the stomach. producing frequently syncope & sometimes death. It is generally cured by Opium. It will produce the same disease when made cold by ice. Simple water seldom brings on disease when taken too hot. Water quenches thirst more when it has stood for some time & has assumed the temperatude of the Atmosphere. It produces disease from being mixed with foreign substances.

The practice of drinking cold water in the morning as soon as we rise from our beds. & in the evening when we are going to bed is very injurious

injurious. It produces disease from drinking too much at a time & between meals. Wine produces many morbid effects: It first produces a quick pulse, & exhilerates the spirits, afterwards intoxication & finally sleep. These are its acute effects (if I may use the expression) Its chronic effects are plethora & gout. It is most apt to produce it in moist, than dry climates. It produces fat which I call a disease. Wine when taken by itself & not without aliments, is most apt to bring on Gout. Beer when taken in excess brings on Gout, & sometimes the Gravel & Stone. It operates by its distention & by its stimulus. Cyder is very healthy for labouring people but to persons of a sedentary disposition it produces rheumatism & Gout; this may be prevented by plunging a red hot iron into it; the iron mixing with the cyder obtunds its acrimony. Beer & Cyder when taken cold produces the same effects, as cold water.

Seven Physicians have died in this City since the establishment of Brown's System; they died martyrs to intemperance from following that System.

Since his followers are known by their

vinous

immoderate use of Ardent Spirits. let mine be known by the disuse of it. I ever you see a Physician, with carbuncles on his face, or with trembling hands in a sick room, or at a tavern, lifting up a glass of grog to his mouth & drinking it down, if he has been a student of mine call him an impotter, & an apostate, for I disown him entirely.

Of the Influence of Dress upon Health.

Who would suppose that the covering of our bodies should produce disease.

Dressing too light at night, & sleeping under too few bed clothes often produces disease.

Dress produces disease,

1. By its quantity.
2. By its Fashion.
3. By its quality.

1. By its quantity. It is often a source of disease by being too light. The colds which are caught at tea parties & other amusements, arise from being exposed to the air in too thin dresses. Instances of persons suffering from too much clothes are uncommon; the only thing I ever knew it to occasion was in the single instance of Hemoptysis.

2. By its Fashion. It produces most frequently disease in the feminal sex. It sometimes occasions

occasions disease by being too tight. I have known diseases brought on by tying Night caps too tight; from tight shall clothes; from the shirt collar being too tight; from tying garters too tight. Tight Gaiters on young people occasions big knees, an as an cords swellings, & stumbling in walking.

The conduct of the Ladies, by their shewing us their naked bodies, is a true specimen of human depravity. The Ladies now follow their mother Eve. She went about naked, & was not ashamed herself, because she was innocent. They go about naked & are not ashamed themselves, but not because they are innocent. It is a common observation that "the nakedness of the women is the clothing of the Physicians."

3. By its quality. according to its warmth, & by its being more or less a safe repository of heat. Flannel worn next to the skin, is the most healthy dress. I knew a whole regiment during the war, that were kept from having the camp fever, by wearing flannel Shirts. The Roman Soldiers are generally healthy owing to their wearing flannel shirts instead of Linnen. Having thus spoken of the diseases produced by dress. I shall now

now mention the diseases produced by diseases.
Hair Powder has first brought into use for
the disease of the head called Plica Polonica.
Patches upon the face to hide small sores.
Poultice in the crural, to conceal the Scrofu-
ula; & Boots to conceal crooked Legs.

Effects of Poison.

Any matter which, when introduced into the system extinguishing life is called poison.
It is of a relative nature. The poison of the
viper may be swallowed without inducing
death; if brought in contact with the blood it
occasions death.

Poisons are either Animal, Vegetable, Mine-
ral, or Aerial. It belongs to Natural Histo-
ry to treat of them.

Animal. The Viper & the Rattle-snake are
the most deadly poison; many Insects produ-
ce local poison.

Vegetables are very numerous, the principle
of them are hemlock, night-shade, digitalis,
Stramonium, phytolacca & hemlock. All
these under certain circumstances produce
disease & death slowly. The cashew nut and
some others act only upon the skin, partic
ularly the Rhus Radicans.

Minerals

Minerals are arsenic, lead, mercury, copper, & a few others.
Aerial. Most of the Gases when taken in too large quantities are poisonous.
Different poisons act on different parts & produce death, according to the part on which they act. Some act upon the brain: those which are taken into the stomach & affect the brain cause immediate death; Some act primarily upon the muscles & sometimes cause palsy before death; Some act upon the blood by changing its quality & dissolving it, which acts upon the whole system, & causes death; the bite of the Vipers acts in this way. They also act by their excessive stimuli, causing a sudden stoppage of the powers which produce motion. Or by its imparting to the blood a preternatural stimulus, or taking away its life.
Some poisons act upon the Lymphatics, — others primarily upon the bowels & Stomach. Some act upon the Skin, & sometimes upon the whole system at the same time. Opium & miasmata act in this way. Opium is an universal stimulus; Some act specifically upon the lungs as the carbonic acid. The poison of an Insect called Dyspas affects the
lungs

fances only. V produces excessive thirst which causes death. Slow poisons are, of the vegetable kind, they cause death by bringing on chronic V hectic fevers, which terminate in death.

Of Worms.

These living creatures exist in every part of the body at times.

They often exist in the bladder without inducing disease, & without any pain in voiding them with the urine. They exist in the Liver, sometimes in the throat. I knew a sea Captain, who frequently, by a slight cough, brought up little black worms.

Sometimes they are found in the frontal and maxillary sinuses; when there, they cause pain in the head. Sometimes in the nose and ears. & even in the brain after death as has been seen in dissections. They are most commonly found in the Alimentary canal; there are two kinds of them, the lumbricales or round worm V the tænia or tape worm.

These worms are born with us. V in us; this is proved, from their being found in new born infants V abortives. The round worm exists only in the human body. The seeds of them are conveyed into the system by the Mothers milk, or by aliments. In the womb from the liquor

*, it seldom affects the arterial system.

liquor in which they float. I believe they exist necessarily. I are kindly sent to convey away the superfluous matter collected in the alimentary canal, & I believe many diseases are brought on for the want of them. I speak of the tape-worm only. Too great a quantity of them produces disease, the disease is generally confined to the alimentary canal & nervous system.*

For this reason I have denied what is called worm fever. They are most disposed to disease in Autumn, because the Autumnal fever, awakens them from their torpidity. Sheep have most worms in rainy seasons. Children are more subject to them than adults. Some Nations are more subject to them, than others, particularly the Italians.

Children who eat a good deal of sugar, & drink wine, are rarely affected with worms.

Of the effects of Anomalous Substances on Health.

Small pieces of stone, cherry stones, pieces of money, & other substances, sometimes get into the Alimentary canal, & unless removed — produce disease. I have known of two instances of death from the swallowing of cherry stones. Copper in the stomach produces nausea & vomiting, which discharges it.

Food.

Food & drink when they get into the wind pipe produces coughing, which generally throws it out immediately, if it did not, death would very soon follow. I have known a water melon seed getting into the glottis to cause instantaneous death. Buttons, grains of corn, wheat or coffee, are often pushed by children up the nose! If they are not immediately removed, cause inflammation.

Needles & pins are often pushed thro' the skin & cause disease. I attended a Lady with a diseased uterus, there was discharged from it sometimes blood & sometimes water, all my prescriptions had no effect; she was finally cured, by a pin thrusting itself out from the vagina, & causing a great deal of pain, it is probable she had swallowed this pin sometime by accident.

Shot & Balls by being left in the body often bring on madness. I one prevented a case of madness, by cutting some shot out of the foot of a person. Pomatum & paint cause disease, the former headache, the latter — nervous diseases.

Retention of the Faces & Urine cause disease. The system generally requires a stool every day, but some persons go for days & weeks

weeks & even months without a stool. I have heard of a Sailor who sailed from Philadelphia to Lisbon, & back again, without having a single stool, & was healthy; it was carried off by perspiration & by the lymphatics. Too long retention of the faces causes the piles, colic, ruptures & fevers.

Urine when too long retained cause a great deal of pain in the Bladder. Sometimes it is attended with a constant desire to void urine, & cannot.

Obstructed Perspiration causes disease.

An hundred diseases have been ascribed to suppressed perspiration, & I think very properly. Obstructed perspiration arises from moist air, different kinds of food, dirty substances, too little exercise, night air, damp feet. &c. It is most hurtful in summer. Its effects are lassitude, & sense of pain in all the limbs, coryza, catarrh, diarrhoea, fevers, eruptions on the skin &c.

Obstruction of the secretion of Bile causes disease.

The cystic bile, is sometimes obstructed by spasms, viscidity, or by gall stones. It

It causes costiveness & white stools, & a defect of bodily activity. I have seen an instance of a white face being turned entirely black. In the black jaundice from this cause.

Hepatic bile being obstructed causes yellow jaundice; itching of the skin, indigestion, emaciation, atrophy &c.

Of the effects of the Retention of the Semen upon Health.

There are no diseases arising from it, unless attended with venereal desires.

Suppression of the Menses.

They often produce, fever & hysteria.

Too much motion or too much rest induces debility; too much rest induces debility by abstraction. The curse made upon Adam, that he should earn his bread by the sweat of his brow, was a blessing instead of a curse. Women endure a sedentary life much better than Men. Too much sleep induces debility from abstraction.

Wakefulness is a relative term. Sleeping with our clothes on, too many bed cloathes, damp sheets &c. all produce disease. Many persons have passed nights & days. & even 1 weeks without sleeping. I have heard of a woman, who did not sleep for forty five days before

before parturition. Dr Boerhaave passed six weeks without sleep. The common causes of wakefulness, are grief, despair, love, anxiety, law suits, too little exercise & fevers. The watchmen & ringing of the bells frequently cause wakefulness.

The undue Exercises of the Faculties of the Mind cause disease, by increasing or lessening the motions of the brain.

An undue exercise of the understanding has been known to produce a falling off of the hair from the head & other parts of the body; it also impares health.

A sedentary & solitary life is injurious in proportion as it is accompanied with the — night air, or the hereditary predisposition, from strong passions, nature of the subject upon which the understanding is employd, the disproportion between the subject & the age of the person, & according to the sudden transition from idleness to Study.

The body may be pedakened by idleness, from the want of stimulus.

The imagination when unduly exercised impairs the other faculties & causes disease; hence one of the causes, & the chief cause of the madness of the Poets.

The memory & moral faculty are also inju-

do

red by being too much exercised.

The Passions

They may be divided into acute & chronic, or into emotions & passions properly so called.

They are also divided into stimulating & sedative; the stimulating have a positive effect, the sedative a relative. Hope is a stimulus & despair a sedative.

Love acts different according as it is mixed with doubts or fears, when combined with both, it causes wakefulness & disease.

Joy is a powerful stimulus, so much so as sometimes to cause death. The doorkeeper in the house of Congress, fell down dead on hearing of the capture of Lord Cornwallis. In successful speculations, it has caused madness. It often produces depression of the brain & causes low spirits.

Lord Cornbury killed himself the evening after he was appointed Governor.

Joy acts most intensely when the excitability of the system, has been accumulating by fear.

Anger was implanted in the mind for useful purposes. It is a powerful stimulus it produces redness of the Eyes! secretion of Saliva - headach! great strength, abortion, Apoplexy, & sometimes death. Combined with fear it

causes

causes nausea, & vomiting.

Grief causes fever, dyspepsia, hypochondria, catalepsy, mania, & frequently death. When chronic it causes a loss of memory, & when intense the tears cease to flow. There is a certain point above & below, when the tears cease to flow.

Persons affected with grief generally sleep — very sound.

Fear, causes paleness, thirst, tremors, cough, diarhœa, pale urine, epilepsy, bloody sweats, mania & often times death. It sometimes causes the hair to rise on the head. I have known it produce grey hairs & baldness.

It suspends & destroys the memory. I have known it to produce convulsion in one person who was detected in the act of stealing: & in another who was detected in the same act it produced syncope. It is more violent according as it is combined with guilt, shame, or debt. When combined with anger it produces great strength and courage.

Ambition sometimes causes disease.

Avarice also. 1. From that which is due to all the world. 2. From their country. 3. From neighbours. 4. To wife. 5. To children 6. To himself. hence it is often said, that Misers die for want of what they have got.

Loss of money altho it is not necessarily wan-

to

ted induces dyspepsia, mania & sometimes death.

Influence of the Venereal Appetite upon Health when too much indulged.

It seldom produces disease when indulged in a lawful manner.

The indulgence of it at too early a period of life, & the excess in both men when married to young wives, causes disease; not so much so when man & woman are both of the same age. When stimulated by obscene books, prints, or medicines which act upon the organs of generation, it causes disease. It impairs health, & tends to disease when gratified by Onanism. Excessive indulgence of it in a lawful way, occasions disease.

Influence of the Different States of Society upon Health.

They are divided into savage, barbarous, & civilized. Diseases of the civilized life invade all parts of the body, but most commonly they are seated in the nerves. Disappointments in ambition in highly civilized people often causes death.

Of the Effects of Governments.

Governments are either despotic, half despotic, limited or free. Black people frequently die of those diseases, from which white people recover

recover; the disease generally attacks them with more violence. Slaves are not long lived. In the West Indies the blacks are more subject to disease than the white people, from their being more irritable; but blacks in general bear operations upon them much better than the white people, because they have less sensibility. The subjects of despotic Govt. have more irritability than sensibility. The alternate thoughts of liberty & slavery upon their minds produce debility & disease. A Republican form of Government is the most favourable to health. I this I infer, from the longevity of the people of Connecticut who are governed by a republic.

Influence of Religion.

Those who possess true religion are in some measure happy. It aspires with hope, produces universal love, & causes health.

Influence of Employments.

The first employment that was given to man was to till the ground, & next building, a cover or defence from the weather; this occupation by being performed in the open air is the most healthy. Farmers & Carpenters, who work in the open air, are never subject to any diseases, but those which arise from accident only. Carpenters are said to be the longest

longest lived people in this city; this is owing to their working in the open air, & at the same time using a good deal of exercise along with it, which adds greatly to health. Day labourers are often affected with fevers & rheumatisms. Sailors with scurvy. Soldiers with fevers & rheumatic affections!. Servants male & female with many diseases. Watchmakers suffer from want of air, & from straining of their eyes. Bakers are affected with pulmonic complaints. Smiths of all kinds with inflammatory fevers. Printers with paralytic affections. I have seen a printer in our hospital whose hands were entirely paralytic which was brought on by the constant working among the Types made of lead. Studious persons suffer from a sedentary life, & from the mind being fatigued, overcome, causes dyspepsia, fevers & consumptions. Lawyers & Physicians by blending exercise with study, generally escape the disease of the season. Physicians who ride much on horseback are subject to Costiveness, piles, stone &c. Scribeners are subject to a paralysis of the right hand.

Influence

Influence of certain Amusements.

The fatigue of amusements induce debility and disease. They are most hurtful to Women. from their standing at the Looking Glass two or three hours dressing. & by changing their clothes. & instead of putting on warmer & thicker clothes, they put on thinner & less clothes, in order to shew their handsome shape & size. by doing this. they are subject to Catarrhs & Consumptions. Amusements are hurtful from too many being crowded in a room. & confining there for some time. Dancing induces ~~disease~~ from debility. I knew an instance of a man falling down dead whilst dancing a country reel. It most generally induces catarrh. The Theatre disposes to nervous diseases. Tragedies it is said produces sympathy benevolence & charity. I deny it. A Lady who will sob & weep over Tragedies will whip at home, starve her servants, treat them unkindly, & even drive the poor beggar from her door, without giving him any assistance.

Hunting from the long continuance of the exercise, & from hunger, causes debility and acute diseases. I have known hydrocephalus internus to be brought on a boy by his

his frequently standing upon his head.

Influence of Customs.

Draughts in the morning, wine and bitters drank before dinner are all very healthy. Women have a custom of paying what they call lying in visits, which is a very absurd practice. It often causes disease to the person they visit. Happily for the Citizens of Philadelphia this practice is nearly done away. This was an universal custom thirty or forty years ago. The ringing of bells at a funeral is injurious. None of the effects of custom are so injurious to health as that of chewing & smoaking Tobacco.

Of the diseases which arise from Unhealthy Ancestors.

They are either congenical or hereditary. The first appear immediately after birth. The hereditary depends upon two causes, viz. shape & predisposition. The congenical are, the venereal, small-pox & the yellow fever. The Consumptions & mania are according to the shape of the breast. Consumptions are most generally derived from the Father. Mania's from the Mother. Four instances of Hare-lip have occured in one family in

Bucks

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Bucks County, Pennsylvania. A physician should always enquire in a chronic disease whether it is hereditary. There is another kind of disease which I call filial; that is where the parents are both healthy, but the children are all affected with the same disease

Those diseases arise from the sameness of diet, habit & customs among the children. I have known of three children in one family being affected with Epilepsy, four with Palsey, in another family, & three with Consumptions in another, in all of which the Parents were healthy. All these diseases frequently pass by the second & affect the third Generation! It would be a great advantage if parents would record their diseases & the remedies which cured them, & transmit them to their posterity.

False systems of Physic cause disease. The different systems of Physic have destroyed thousands, from their great attachment to one of them.

Opium when taken in large doses produces the same effect as a Malignat fever. Whenever we are unsuccessful in curing diseases then we have a false theory.

Habitual remedies used without the advice

vice of a Physician causes disease. The habitual use of Aloes in purges occasions the piles. The habitual use of salts & diarhaea & colic. The habitual use of glisters deprives the lower bowels of their activity. I have known the daily use of camomile Tea to produce vertigo. Butternut pills. the palsey. Purges are often given to children in the Spring to prevent worms, abstinence from animal food would be much better for them.

The habitual use of bitters induces debility & destroys the tone of the stomach, & promotes a desire for ardent Spirits.

The habitual use of Nitre disorganizes the Stomach, & causes indigestion & Spasms Opium causes langour & dyspepsia. The habitual use of blood-letting in the Spring causes plethora. The habitual use of sweating medicines, are very injurious. Drinks sometimes causes disease. I have known death to take place from drinking a pint of wine in the first stage of a fever. I attended a Cooper in this City! who feeling himself indisposed one day, drank a bottle of wine to cure himself! it brought on a high fever & delirium, & he died in five or six days after.

Peculiarism

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Pediluvium does great harm in fevers: in the forming state of a fever it is an excellent remedy. Too long exercise in an fever of much excitement does harm. Turlington's balsam causes inflammation in the Stomach & bowels. It is said that "James' Powder" killed the celebrated Dr Goldsmith. Quack Medicines do most harm when they do neither good nor hurt, by keeping the patient in suspence. Medicines sometimes do harm when administered at improper times. Attire in the hands of a Physician sometimes produces disease.

Influence of Sympathy & Antipathy

The eyes excite pain, & water from the eyes of those who look at them. Gaping spreads thro' a company, as if it went by contagion. Children often learn to squint from looking at & mimicking those who do. Convulsions are often brought on by sympathy. Long attention to study, & fastings want of sleep, & fasting dispose people to disease. Stuttering is very often induced by sympathy. This principle of imitation is deep seated in the mind. Children often imitate dogs when confined for some time with them. Diseases from antipathy are either congenical or acquired. Many persons are born

born with an antipathy to cats, dogs, & many other thing. Acquired antipathy to aliments, from our being satiated with them at sometime, & from other things by association being combined with fear.

Influence of certain Ideas & Motions.

I have divided them into two kinds only from custom, they are one and the same.

Association of Ideas are of two kinds.

1. Motion with an association of Idea.
2. Motion without any Idea. This I infer from our making water when we are going to bed, altho' we had just before emptied the bladder. The occurrence of Epilepsy probably arises from the association of motion — bringing on the excitability which first produced it. A Lady of Massachusetts for fifteen years was effected with a sneezing every September, owing to the association of motion, & a peculiar quality of the air of that month, she was cured of it by going to another country & staying there several years.

Effects of Accidents upon Health.

Many diseases are produced from burns, falls, bluises, wounds, fractures &c. We had a man in our hospital some time ago who became deranged when twenty three years

of age, it was occasioned by a horse kicking him on the head when he was about fifteen years of age. Wounds & bruises often remain a long time before they occasion disease.

Different Stages of Life.

I. Of Infancy. It occasions diseases from the disproportion of the head to the body; hence the cause of hydrocephalus internus, eruptions behind the ears, tinea capitis; from the openness of the Sutures, hence another cause of hydrocephalus; from the peculiar irritability of the Stomach & bowels; from dentition; from the delicate texture of the Skin; from worms; these become the causes of Stomach and bowel complaints.

III. Of Childhood. These diseases are much the same as in infancy, except that they are not so much disposed to irritability. More children die in cold than in warm climates. In a greater proportion of boys than Girls die before the age of puberty, owing to their exposing themselves more to accidents, cold & fatigue.

Predisposition of diseases from Puberty. Young persons at this age are more subject to fevers, catarrhs, pulmonary diseases,

pains

pains in the joints & venereal desires from an increase of the venereal passions, than at any other time.

IIII. Of Manhood. Men at this time are disposed to fevers, pulmonary complaints & plethora, they are also subject to Hemorrhoids & Melæna.

IV. Old Age. A cessation of the catamenia in women is a sign of old age. Between sixty & seventy years of age the teeth become loose & fall out. The fluids of very old people become very acrid; the disposition of old people to weep & be angry on trifling occasions arises from the great irritability of the nervous system. Old people are affected with tremors, & weakness of the legs, from which reason they often fall. Death from old age arises from exhausted irritability & sensibility.

Effects of Celibacy & Married Life.

Monks seldom live over sixty. A Bachelor life may be compared to a good breakfast, a tolerable dinner, but a very bad supper. Single women are subject to many diseases. More single persons sick in a year, than married. & more single men than women. Married persons are subject to fevers soon after matrimony from causes too obvious to mention.

tion. Married women are subject to no diseases, but those which arise from Pareunesis & pregnancy. Females during pregnancy are subject to inflammatory fevers. & are more subject to Epidemics; it predisposes to colic, from the distention of the Uterus, & to costiveness. Suckling Children predisposes to consumption, also the sudden abstraction of the child often proves fatal. During the period of the ceasing of the Menses women are subject to a venous plethora, & the nervous system is affected: for the treatment of this disease I refer you to Dr Fothergills publication.

Deformity is a consequence of disease, — when partial it consists in a preternatural difference in the head, trunk or extremities, from common people. Men of low stature are generally short lived & subject to many diseases. Men who become fat before the fortieth year are generally long lived. A big head & short neck disposes to Apoplexy. Women suffer less from deformity than men, owing to their not using much exercise. Congenial weakness of a whole, or a part of the body causes disease. Seven months Children generally bring this disease with them.

Pneumony

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Pneumony's half cured, disposes to Consumption. A Stricture in the Urethra, to gravel & Stone.

We have thus considered the remote proximate & the exciting causes of disease we now proceed to consider the changes which the system undergoes at death, or just before it. The causes of death I have reduced to seven, for which see my Lectures on Animal life.

In death from ordinary cases, the disease is continued with great morbid excitement, first before death, the morbid excitement is changed. 1. into the mind by two ways.

First, by Elevation: we often hear of parents calling their children & family to their beds, taking leave of them, & speaking to them with the utmost serenity of mind. This proceeds from the morbid excitement which is translated into the mind & elevating it. We often discover talents in dying people which we have never heard of, or seen in them before. I knew a Lady who when dying spoke to her friends only in rhymes: Sometimes the passions are highly excited.

Second, by inducing Delirium; this is very common in acute diseases & sometimes in chronic. I knew a Clergyman who died cursing & swearing, who was never heard to use an oath before.

2. Into

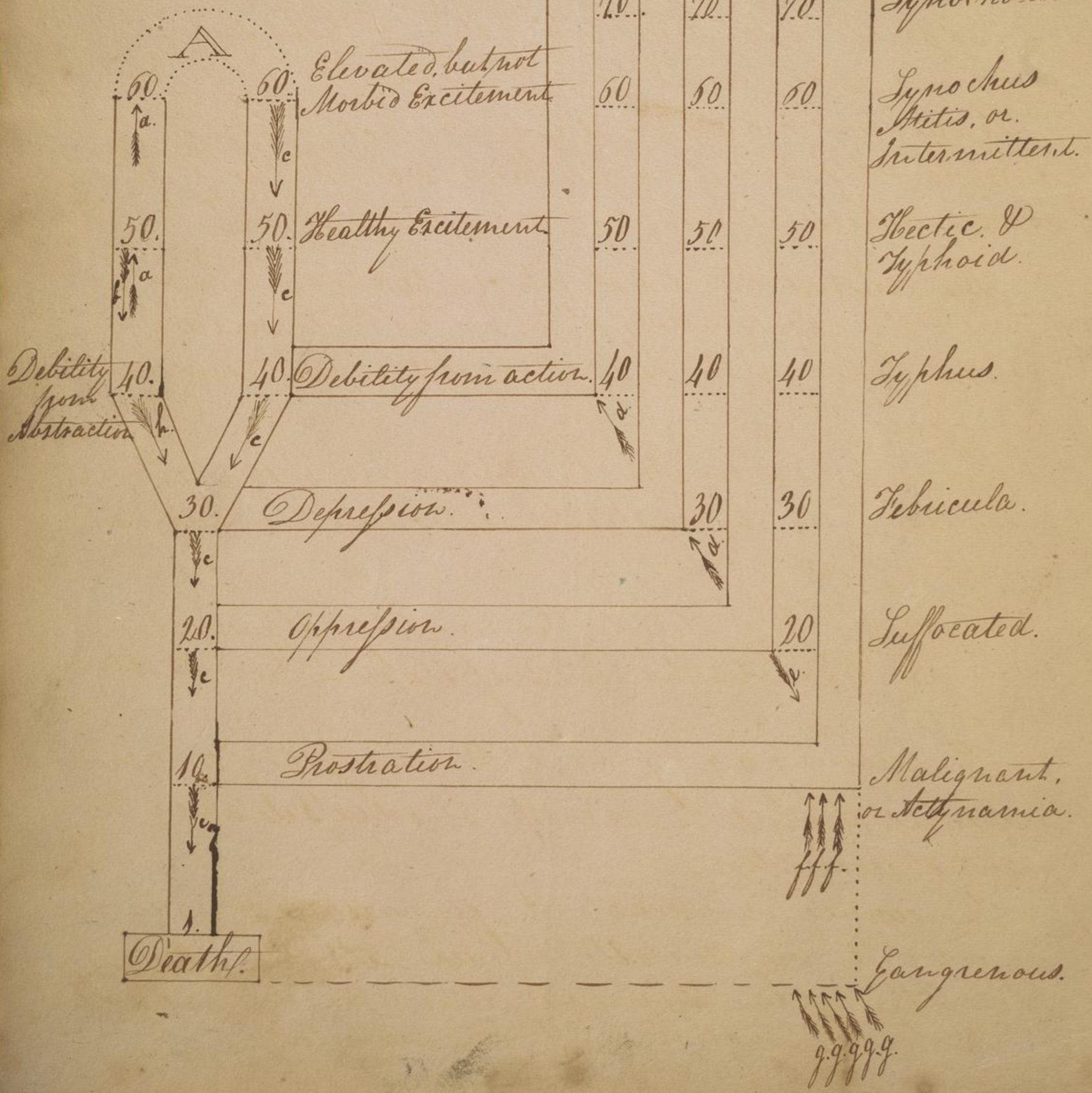
2. Into the Brain. 3. Into the Senses causing great pain. 4. To the Trachea, Larynx & Glottis, hence the shrill voice, loud bathing & shrieks just at death. 5. To the Fauces, hence the intense thirst. 6. To the Stomach, hence vomiting. 7. To the Bowels, hence diarrhoea. 8. To the Kidneys, hence the undue quantity of urine which is frequently discharged whilst dying. 9. To the muscles, hence convulsions, leaping out of bed, putting on their clothes &c. 10. Sometimes to the Arteries, hence the hemorrhages which precede & follow death, also the fulness of the pulse. 11. To the Lymphatics in the hour of death, hence the absorption of water after death, in many cases from dropsy &c. 12. Sometimes to the Skin, hence the profuse sweats, eruptions & increased heat just before death; the body becomes cold just before death, after death it becomes warm owing to the heat coming from the viscera. 13. To the Penis. Morbid excitement sometimes produces pleasurable sensations. I have known & heard of many persons who have died laughing. Respiration becomes altogether voluntary

untary at the close of life. The faces & urine are often discharged involantarily at this time. The coldness of death generally begins at the toes & fingers, but sometimes at the wrists first. Death is often attended with pain & insensibility.

Anomalous Symptoms. Just before death, the eyes are nearly closed, the white part only is seen, the pupil becomes larger; after death. less heath & colour often remain a day or two after death. Sometimes a yellow colour appears after death; sometimes tears are seen rolling down the cheeks after death.

The body putrefies sooner after acute, than after chronic diseases. The bowels putrefy first, the bones last.

Thus Gentlemen have we finished our Pathology.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Synochus Fortis.
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Synocha.
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Synochula.
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Synochoid.
Elevated, but not Morbid Excitement
60
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60
Synochus Stitis, or Intermittent.
50.
50.
Healthy Excitement
50
50
50
Hectic & Typhoid.
Debility from Abstraction
40.
40.
Debility from action.
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40
Typhus.
30.
Depression.
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30
Febricula.
20.
Oppression.
20
Suffocated.
10.
Prostration.
Malignant, or Actynamia.
1.
Death.
Gangrenous.

References.

A Table of remote, predisposing, exciting & proximate causes of Ordinary Fevers.

The straight lines A. denotes the bloodvessels.

The arrows b.b. denote the abstraction of the stimuli and the reduction of the system, thereby the debility of abstraction.

The arrows a.a. denote the action of those stimuli which induce elevated excitement.

The arrows c.c.c.c.c.c.c. denote the action of stimuli in producing, according to their force, the debility of action, depression, prostration, and death.

The arrows d.d. denote the irritants which by acting on the excitability of the bloodvessels, suddenly accumulated by the reduction of their excitement induce fever.

The arrows e. denotes the abstraction of stimuli in order to favour the system's rising into obvious and sensible fever.

The arrows f.f.f. denote the necessity of powerful stimuli, to excite the bloodvessels from their prostrate state.

The arrows g.g.g.g.g. denote the necessity of still more powerful stimuli to raise the bloodvessels above the point of prostration.

The curved lines denote the ~~corrective~~ irregular action of the bloodvessels in fever with the relative force of the twelve primary forms of fever to each other & to the healthy action in the bloodvessels.

There.

These relations are expressed by numbers ascending from 50 to 100, & descending from 50 to one.

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